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REVIEW OF THE IMPLEMENTATION OF THE CONVENTION AND OF DECISIONS OF THE FIRST SESSION OF THE CONFERENCE OF THE PARTIES

COMMITMENTS IN ARTICLE 4

Second compilation and synthesis of first national communications from Annex I Parties

Addendum

TABLES OF INVENTORIES OF ANTHROPOGENIC EMISSIONS AND REMOVALS AND PROJECTIONS FOR 2000

CONTENTS

		Page
General notes		3
Explanatory notes		4
Table A.1	Anthropogenic CO_2 emissions, excluding land-use change and forestry, 1990	6
Table A.2	Anthropogenic CO_2 emissions from fuel combustion, 1990	8
Table A.3	Anthropogenic emissions and removals from land-use change and forestry and impact on total CO_2 emissions, 1990	10
Table A.4	Anthropogenic emissions of CH_4, 1990	12

		Page
Table A.5	Anthropogenic emissions of N_2O, 1990	14
Table A.6	Anthropogenic emissions from international bunkers, 1990	16
Table A.7	Anthropogenic emissions of other greenhouse gases, 1990	18
Table A.8	Anthropogenic emissions of precursor gases, 1990	20
Table A.9	Per capita CH_4 and CO_2 emissions, 1990	22
Table A.10	Total primary energy supply by energy type, 1990	24
Figure A.1	Proportion of different greenhouse gas emissions by Party	26
Table B.1	Projected anthropogenic emissions of CO_2, excluding land-use change and forestry	28
Table B.2	CO_2 projections in land-use change and forestry	32
Table B.3	Projected anthropogenic emissions of CH_4	34
Table B.4	Projected anthropogenic emissions of N_2O	36
Table B.5	Projections for other greenhouse gases	38
Table B.6	Projected anthropogenic emissions of all greenhouse gases, excluding land-use change and forestry	40
Table B.7	Projected anthropogenic emissions and removals of all greenhouse gases	42
Table B.8	Projections for precursor gases	44
Table C.1	Anthropogenic CO_2 emissions and removals, 1991-1994	46
Table C.2	Anthropogenic emissions of CH_4, 1991-1994	50
Table C.3	Anthropogenic emissions of N_2O, 1991-1994	54
Table C.4	Anthropogenic emissions of other greenhouse gases, 1991-1994	58
Table C.5	Anthropogenic emissions of CO_2, CH_4, N_2O and all greenhouse gases: relative inventory figures for 1991-1994	62

General notes

Data on inventories of emissions and removals as well as data on projections are included in the tables below. The purpose of these tables is to present in a consistent and comparable fashion inventory data from the Parties included in Annex I to the Convention. The tables include comments and footnotes where appropriate, but further details and a description of the inventories of emissions and removals, and projections are included in FCCC/CP/1996/12/Add.1.

It should be noted that the figures presented here do not necessarily correspond to those in the national communications as originally submitted, as Parties have provided new submissions, and updates have been made in the course of in-depth reviews and at the direct request of the secretariat during the process of the second compilation and synthesis of national communications.

Figures may differ from those submitted to the secretariat as a result of rounding during data input and processing, corrections of typographical and calculation errors or omissions, and the presentation (for consistency and comparability) of subtotals and totals not provided in the communications or other submissions. Some differences are also due to the fact that, in striving to ensure consistency and comparability of results, the secretariat has had to convert some of the estimates reported so that they concur with the guidelines for preparation of national communications. Such changes include subtraction of emissions from bunker fuels, "electricity import corrections" and "temperature corrections".

The information contained in this document covers 31 Annex I Parties which submitted their national communications by 1 May 1996, that is all Annex I Parties except Belgium[1] (information available for tables A.1 and A.2 only), the European Community[2] and Lithuania,[3] plus Liechtenstein and Monaco which, though not listed in Annex I, have also submitted their communications. Belarus, Turkey and Ukraine, although included in Annex I, have not yet ratified or acceded to the Convention.

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[1]Submission due date 15 October 1996.

[2]Submission due date 21 September 1994.

[3]Submission due date 22 December 1995.

Explanatory notes

The following symbols have been used in the document:

Two dots (..) indicate that data are not available, not reported separately or not applicable.
A minus sign (-) before a figure indicates an amount subtracted or a decrease.
A point (.) is used to indicate decimals.
(~) before a figure indicates an approximation.
(≤) before a figure indicates that the actual figure is equal to or less than the figure shown.
(≥) before a figure indicates that the actual figure is equal to or greater than the figure shown.
(<) before a figure indicates that the actual figure is less than the figure shown.
(>) before a figure indicates that the actual figure is greater than the figure shown.

References to "guidelines" are to the "Guidelines for the preparation of first communications by Annex I Parties", document A/AC.237/55, annex I, decision 9/2.
References to "IPCC Guidelines" are to the Draft Guidelines for National Greenhouse Gas Inventories drawn up by the Intergovernmental Panel on Climate Change (IPCC).
References to "dollars" ($) indicate United States dollars.
Text in *italics* under the tables indicates major source/sink categories from the IPCC Guidelines.

The following chemical symbols and abbreviations have been used:

CF_4	tetrafluoromethane
CFCs	chlorofluorocarbons
C_2F_6	hexafluoroethane
CH_4	methane
CO	carbon monoxide
CO_2	carbon dioxide
HCFCs	hydrochlorofluorocarbons
HFCs	hydrofluorocarbons
N_2O	nitrous oxide
NO_x	nitrogen oxides
NMVOCs	non-methane volatile organic compounds
PFCs	perfluorocarbons
SF_6	sulphur hexafluoride
VOCs	volatile organic compounds

The following units of weight have been used:

Gg	gigagram (10^9 grams)
Mt	megatonne (10^6 tonnes)

The following other abbreviations have been used:

EIT	countries that are undergoing the process of transition to a market economy
GWP	global warming potential
IDR	in-depth review
CHP	combined heat and power

The following ISO country codes have been used:

Party	Country code	Party	Country code
Australia	AUS	Latvia	LAT
Austria	AUT	Liechtenstein	LIE
Belgium	BEL	Luxembourg	LUX
Bulgaria	BUL	Monaco	MON
Canada	CAN	Netherlands	NLD
Czech Republic	CZE	New Zealand	NZL
Denmark	DNK	Norway	NOR
Estonia	EST	Poland	POL
Finland	FIN	Portugal	POR
France	FRA	Romania	ROM
Germany	DEU	Russian Federation	RUS
Greece	GRE	Slovakia	SLO
Hungary	HUN	Spain	ESP
Iceland	ICE	Sweden	SWE
Ireland	IRE	Switzerland	CHE
Italy	ITA	United Kingdom	GBR
Japan	JPN	United States	USA

Table A.1. Anthropogenic CO_2 emissions, excluding land-use change and forestry, 1990 (Gigagrams and percentage of total by Party)

	Energy				Industrial processes		Waste		Other**		Total
	Fuel combustion*		Fugitive fuel emissions								
	(Gg)	(%)	(Gg)	(%)	(Gg)	(%)	(Gg)	(%)	(Gg)	(%)	(Gg)
Australia	277 987	96.2	4 086	1.4	6 892	2.4	..		..		288 965
Austria	57 100	96.5	..		2 100	3.5	..		..		59 200
Belgium[a]	106 298	92.9	..		7 198	6.3	914[b]	0.8	..		114 410
Bulgaria	76 535	92.2	..		5 680	6.8	775[c]	0.9	..		82 990
(Bulgaria)[d]	(90 327	93.2)	..		(5 890	6.1)	(661	0.7)	..		(96 878)
Canada	419 032	90.6	14 192	3.1	21 746	4.7	673	0.1	7 000	1.5	462 643
Czech Republic	157 364	94.9	..		8 428	5.1	..		..		165 792
Denmark	50 997	98.0	..		1 028	2.0	..		..		52 025
(Denmark)[e]	(57 250	98.2)	..		(1 028	1.8)	..		..		(58 278)
Estonia	37 184	98.4	..		613	1.6	..		..		37 797
Finland	52 600	97.6	100	0.2	1 200	2.2	..		..		53 900
France	349 660	95.4	181	0.0	16 695	4.6	..[f]		..		366 536
Germany	986 640	97.3	..		27 515	2.7	..		..		1 014 155
Greece	76 210	92.8	..		5 890	7.2	..		..		82 100
Hungary	68 105	95.0	..		3 568	5.0	..		..		71 673
(Hungary)[g]	(80 089	95.7)	..		(3 587	4.3)	..		..		(83 676)
Iceland	1 698	78.2	79	3.6	391	18.0	..		5	0.2	2 172
Ireland	29 038	94.5	..		1 627	5.3	54[b]	0.2	..		30 719
Italy	401 350	93.6	..		27 591	6.4	..[h]		..		428 941
Japan	1 057 000	91.6	..		53 000	4.6	44 000[c]	3.8	..		1 155 000
Latvia	22 606	98.4	..		371	1.6	..		..		22 976
Liechtenstein[i]	..		..		..		..		..		208
Luxembourg	10 626	93.7	..		585	5.2	132[b]	1.2	..		11 343
Monaco	..		..		..		71[b]	100.0	..		71
Netherlands	164 800	98.3	..		1 900	1.1	900	0.5	..		167 600
(Netherlands)[j]	(171 200	98.4)	..		(1 900	1.1)	(900	0.5)	..		(174 000)
New Zealand	22 474	88.2	615	2.4	2 387	9.4	..		..		25 476
Norway	27 041	76.1	1 559	4.4	6 514	18.3	81	0.2	319	0.9	35 514
Poland[k]	..		..		..		..		..		414 930
(Poland)[k]	(465 229	97.1)	(52	0.0)	(13 599	2.8)	..		..		(478 880)
Portugal	38 686	91.8	..		3 462	8.2	..		..		42 148
Romania[l]	..		..		..		..		..		171 103[m]
(Romania)[n]	(198 472	99.9)	..		(9 244[o]	4.7)	(7	0.0)	..		(198 479)
Russian Federation[l]	2 330 000[p]	97.5	18 350	0.8	40 370	1.7	..		..		2 388 720
Slovakia	55 033	94.4	..		2 775	4.8	470[b]	0.8	..		58 278
Spain	209 012	91.9	413	0.2	17 696	7.8	149[q]	0.1	52	0.0	227 322
Sweden	55 122	90.0	53	0.1	4 972	8.1	275[b]	0.4	834	1.4	61 256
Switzerland	40 330	89.5	56	0.1	3 363	7.5	1 320[b]	2.9	..		45 070
United Kingdom	563 401	97.6	5 677	1.0	7 421	1.3	513	0.1	..		577 012
United States	4 895 432	98.8	6 560	0.1	55 030	1.1	..		..		4 957 022
Total[r]	12 639 361	96.6	51 921	0.4	338 007	2.6	50 327	0.4	8 210	0.1	13 675 067

* See notes to table A.2.

** Includes source/sink categories *solvent use* and *agriculture*. In the light of the different ways of reporting used by Parties, emissions from *land-use change and forestry* were excluded from the table for comparison and consistency purposes. Emission estimates were provided for the following source/sink categories for which no IPCC default methods exist: production of iron and steel, aluminium, other non-ferrous metals, ammonia, soda ash, lime, glass, fertilizer, other organic chemicals and CO_2 manufacture, limestone use, flue gas desulphurization and *solvent use*.

[a] Belgium became a Party to the Convention on 15 April 1996 and has not yet submitted a national communication. The CO_2 inventory data presented here are taken from Belgium's official report to the European Community and are included for completeness only.

[b] Parties did not provide details as to whether CO_2 emissions from organic waste combustion, aerobic decomposition, organic carbon in landfills, dumps, sludge or compost were included in national totals.

[c] Parties deviated from IPCC Guidelines by including CO_2 emissions from organic waste combustion, aerobic decomposition, organic carbon in landfills, dumps, sludge or compost in national totals.

[d] Emissions for base year (1988).

[e] Emissions adjusted for electricity import correction for 1990 as presented by Party.

[f] Estimate of 8,038 Gg provided for emission from *waste* but not included in national total.

[g] Emissions for base period (1985-1987).

[h] Estimate of 7,282 Gg provided for emissions from *waste* but not included in national total.

[i] The secretariat chose to report the emissions total only, as the Party used CORINAIR reporting format in providing its 1990 inventory.

[j] Emissions adjusted for temperature correction for 1990 as presented by Party.

[k] Emissions for base year (1988).

[l] Party did not provide inventory data according to IPCC reporting format.

[m] Estimate calculated by the secretariat using the per capita emissions and population figures provided by Party.

[n] Emissions for base year (1989).

[o] Estimate is not included in total to avoid double counting, as Party included emissions from *industrial processes* in fuel combustion (industry).

[p] Party provided a revised figure of 2,346,660 Gg during the in-depth review, but as it was not disaggregated in source/sink categories (see table A.2) for completeness the secretariat used the estimate reported in the national communication.

[q] Party included CO_2 emissions from fossil fuel based wastes under subcategory "other". The secretariat included this value under *waste* category for comparability. Party also provided an estimate of 2,159 Gg for emissions from organic waste but did not include in the national total.

[r] The percentages of the total accounted for by each category have been calculated on the basis of the overall total with the exclusion of Liechtenstein, Poland and Romania (13,088,747 Gg) since data for the individual categories for these Parties were not included in the table. The adjusted estimates and emissions for non-1990 base years were also not taken into account.

Comments

Fuel combustion was the largest source of CO_2 emissions, representing 96.6 per cent of the total. *Industrial processes* accounted for 2.6 per cent. It should be noted that emissions from *industrial processes*, *waste* and *energy* are often not comparable among Parties because they are estimated on the basis of different assumptions applied by them about source definitions.

For 26 Parties, CO_2 emissions from fuel combustion represented more than 90 per cent of total CO_2 emissions. For 14 of them this share was higher than 95 per cent. Monaco showed no fuel combustion emissions because it reported emissions from waste incineration only. Liechtenstein and Poland only presented a CORINAIR inventory for 1990 and Romania only reported overall per capita emissions for this year preventing comparison by sources. For Iceland, New Zealand and Norway, the fuel combustion share ranges from 76 per cent to 88 per cent. These three countries reported higher shares of *industrial processes* emissions (18.7, 9.4 and 18.3 per cent, respectively). This is a consequence of the form of reporting emissions rather than an indicator of industrial development. These countries reported emissions from iron and steel industry in the category of *industrial processes*, while many other countries reported the bulk of those emissions in the *energy* category. This is an indication that in general, the treatment of feedstocks was not well documented, which made it difficult to assess whether double-counting between the *energy*, *industrial processes* and *waste* categories had occurred in the inventories of reporting Parties.

Only 11 countries reported CO_2 fugitive fuel emissions, but they represent less than 1 per cent of the total for eight of them. At 4.8 per cent, Norway had the highest figure among the three remaining Parties.

Fourteen Parties reported emissions from *waste* mainly as a consequence of incineration processes. These emissions remained small for the majority of the Parties (less than 1.5 per cent), but reached a value of 4 per cent for Japan. This Party included biogenic CO_2 emissions in its total, which is in contradiction to the IPCC Guidelines. The Netherlands, Norway, Spain and the United Kingdom explained clearly that they only included in the CO_2 waste emissions those coming from combustion of plastics or other fossil fuel-based material. For the other nine Parties it was unclear whether they had included biogenic emissions or not. It is also possible that Parties which did not report CO_2 emissions from waste incineration departed from the IPCC Guidelines by not including the combustion of products made from fossil fuels.

Table A.2. Anthropogenic CO_2 emissions from fuel combustion, 1990 (Gigagrams and percentage of total by Party)

	Energy and transformation industries		Industry		Residential, commercial/ institutional		Transport		Other*		Total
	(Gg)	(%)	(Gg)	(%)	(Gg)	(%)	(Gg)	(%)	(Gg)	(%)	(Gg)
Australia	160 053	57.6	32 568	11.7	8 351	3.0	68 358	24.6	8 657	3.1	277 987
Austria	13 700[a]	24.0	12 300	21.5	12 100	21.2	16 200	28.4	2 800[b]	4.9	57 100
Belgium[c]	21 795	20.5	25 458	23.9	26 519	24.9	20 567	19.3	11 959[b]	11.3	106 298
Bulgaria[d]	64 220	83.9	..		..		12 315	16.1	..		76 535
(Bulgaria)[e]	(35 079	38.8)	(33 881	37.5)	(6 427	7.1)	(10 753	11.9)	(4 186	4.6)	(90 327)
Canada	137 975	32.9	71 897	17.2	66 778	15.9	139 252	33.2	3 131	0.7	419 032
Czech Republic	92 642	58.9	21 996	14.0	30 441	19.3	7 401	4.7	4 884	3.1	157 364
Denmark	26 479	51.9	5 965	11.7	6 462	12.7	10 491	20.6	1 600	3.1	50 997
(Denmark)[f]	(32 732	57.2)	(5 965	10.4)	(6 462	11.3)	(10 491	18.3)	(1 600	2.8)	(57 250)
Estonia	28 461	76.5	2 898	7.8	1 581	4.3	2 656	7.1	1 589[b]	4.3	37 184
Finland	19 500	37.1	13 700	26.0	5 800	11.0	11 500	21.9	2 100[b]	4.0	52 600
France	60 813	17.4	71 056	20.3	81 845	23.4	128 124	36.6	7 822	2.2	349 660
Germany	439 427[g]	44.5	169 741	17.2	198 190	20.1	158 647	16.1	20 635[b]	2.1	986 640
Greece	43 780	57.4	9 700	12.7	8 260	10.8	14 460	19.0	.. [b]		76 210
Hungary	29 746	43.7	7 893	11.6	18 415	27.0	8 208	12.1	2 462	3.6	68 105
(Hungary)[h]	(36 928	46.1)	(10 893	13.6)	(20 042	25.0)	(7 741	9.7)	(4 485	5.6)	(80 089)
Iceland	5	0.3	233	13.7	66	3.9	1 393	82.0	2	0.1	1 698
Ireland	10 863	37.4	5 431	18.7	7 199	24.8	4 885	16.8	660	2.3	29 038
Italy	138 291	34.5	91 345	22.8	67 473	16.8	95 624	23.8	8 617	2.1	401 350
Japan	381 000	36.0	335 000	31.7	126 000	11.9	207 000	19.6	9 000[b]	0.9	1 057 000
Latvia	8 309	36.8	2 680	11.9	3 140	13.9	5 661	25.0	2 815	12.5	22 606
Liechtenstein[i]	..		..		..		..		..		..
Luxembourg	1 884	17.7	6 626	62.4	1 095	10.3	908	8.5	113	1.1	10 626
Monaco[b]	..		..		..		..		..		..
Netherlands	51 400	31.2	48 200	29.2	28 700	17.4	26 900	16.3	9 700	5.9	164 800
(Netherlands)[f]	(51600	30.1)	(48 900	28.6)	(33 200	19.4)	(26 900	15.7)	(10 800	6.3)	(171 200)
New Zealand	6 079	27.0	4 766	21.2	1 698	7.6	8 748	38.9	1 182	5.3	22 474
Norway	7 357	27.2	3 049	11.3	2 283	8.4	13 901	51.4	451	1.7	27 041
Poland[d]	..		..		..		..		..		..
(Poland)[j]	(261 307	56.2)	(63 843	13.7)	(96 056	20.6)	(34 792	7.5)	(9 231	2.0)	(465 229)
Portugal	19 386	50.1	6 079	15.7	1 936	5.0	9 947	25.7	1 338	3.5	38 686
Romania[d]	..		..		..		..		..		..
(Romania)[k]	(90 663	45.7)	(64 814	32.7)	(31 428	15.8)	(7 893	4.0)	(3 674	1.9)	(198 472)
Russian Federation[d]	1 017 000	43.6	459 000	19.7	..		854 000[l]		..		2 330 000
Slovakia	15 679[m]	28.5	21 155	38.4	12 537	22.8	3 628	6.6	2 034	3.7	55 033
Spain	76 783	36.7	46 403	22.2	20 340	9.7	60 218	28.8	5 269	2.5	209 012
Sweden	7 041	12.8	13 446	24.4	11 543	20.9	23 092	41.9	.. [b]		55 122
Switzerland	963	2.4	5 406	13.4	17 678	43.8	14 668	36.4	1 616[b]	4.0	40 330
United Kingdom	231 277	41.1	96 673	17.2	109 149	19.4	119 247	21.2	7 056	1.3	563 401
United States	1 742 471	35.6	1 065 905	21.8	551 002	11.3	1 502 626	30.7	33 428[n]	0.7	4 895 432
Total[o]	4 854 379	38.4	2 656 569	21.0	1 426 581	13.8	2 696 624	26.2	150 920	1.2	12 639 361

* Includes emissions from energy use in agriculture and forestry.
[a] Includes waste incineration for the production of energy.
[b] Emissions from agriculture and forestry are not included as they were included in other source/sink categories.
[c] Belgium became a Party to the Convention on 15 April 1996 and has not yet submitted a national communication. The CO_2 inventory data presented here are taken from Belgium's official report to the European Community and are included for completeness only.
[d] Party did not provide 1990 inventory data according to IPCC reporting format.
[e] Emissions for base year (1988).
[f] Emissions adjusted for electricity import correction (in energy and transformation industries) for 1990 as presented by Party.
[g] Emissions for base period (1985-1987).
[h] Party only reported emissions from waste incineration.
[i] Emissions adjusted as presented by Party on account of mild temperature conditions in 1990.
[j] Emissions for base year (1988).
[k] Emissions for base year (1989).
[l] Party provided an aggregated estimate of the emissions from residential, commercial/institutional and transport source/sink categories. The secretariat did not include this estimate in the totals for these categories.
[m] Emissions include oil and gas production and storage.
[n] Emissions from agriculture and forestry in *energy* were not estimated.
[o] The totals do not include the adjusted estimates and emissions for non-1990 base years.

Comments

Although energy and transformation industries were identified as the largest source of CO_2 emissions from fuel combustion (38.4 per cent), the sectoral analysis of these emissions showed important differences between Parties. This sector constitutes the largest for 19 of the reporting Parties with a proportion ranging from 83.9 to 34.5 per cent. With the exception of Finland (61 per cent), the other 18 reporting countries also have the higher percentages of fossil fuel in their national energy balance, ranging from 75 per cent (Spain) to 100 per cent (Estonia). Excluding Bulgaria, which together with the Czech Republic reported emissions from this sector, jointly with industry, Estonia has the highest proportion, with 76.5 per cent. This country, whose economy is based on the energy industry, also has the highest CO_2 emissions per capita among the reporting countries.

The transport sector, with 26.2 per cent of fuel combustion emissions, ranks second. For seven Parties (AUT, CAN, FRA, ICE, NZL, NOR, SWE) transport was the largest source of fuel combustion emissions, ranging from 82 per cent (Iceland) to 28.4 (Austria). These countries have a higher reliance on geothermal, nuclear and hydropower generation and/or imported electricity, which explains the lower share of emissions from the energy and transformation industry sector. In this group, Canada has a high fossil fuel dependence (75 per cent), but for the others these values are the lowest among the reporting countries, ranging from 62 per cent (Switzerland) to 37 per cent (Iceland).

In the transport sector, Annex II Parties and Parties that are in the process of transition to a market economy exhibit different patterns. For the former group, the transport emissions represent 26.8 per cent of the fuel combustion category. The only Annex II country with a share lower than 10 per cent is Luxembourg owing to its large industrial emissions share. For the other 22 Annex II reporting countries, transport emissions make up more than 16 per cent of the fuel combustion total and, for half of them, more than 25 per cent. The six EIT countries which disaggregated transport emissions offer a different picture. Transport emissions for those countries which reported them in a disaggregated form represent only 9.5 per cent. Latvia has a share of 25 per cent, which is the highest value. All the others have less than 17 per cent. The Czech Republic, Estonia and Slovakia have even lower shares with less than 8.5 per cent. This pattern is explained by the higher importance of public transport and smaller share of private cars. The bigger EIT countries, Poland, Romania and the Russian Federation were not included in this analysis because they did not present transport emissions in a disaggregated form.

The definition of residential, commercial/institutional and other *energy* (including agriculture and forestry) varied very much amongst the Parties, making a consistent comparison among Parties difficult: out of the 33 Parties reporting, only 16 followed strictly the IPCC format. This fact, together with the different national circumstances of the reporting Parties, provoked a wide variance in the residential and commercial/institutional emissions. The combined value of these two categories varies from 3.0 (Australia) to 43.8 per cent (Switzerland) with an average value of 13.8 per cent, substantially lower than for the other above-mentioned sectors of the fuel combustion category.

Only 20 Parties reported emissions from biomass fuel combustion. Four of those only reported CO_2, which constitutes a departure from the IPCC Guidelines. At least one other departure was detected in the inventories of Bulgaria and Japan, which included CO_2 emissions from biomass fuel combustion in the CO_2 energy total. It was difficult to assess whether the same was true for the 13 Parties which did not report biomass emissions separately.

Table A.3. Anthropogenic emissions and removals from land-use change and forestry and impact on total CO_2 emissions, 1990 (Gigagrams)

	Emissions (Gg)	Removals (Gg)	Land-use change and forestry (Gg)	National CO_2 emissions without land-use change and forestry* (Gg)	National CO_2 emissions with reported land-use change and forestry (Gg)	Percentage decrease/increase (-/+) of national CO_2 emissions considering land-use change and forestry (%)
	A	B	C = A + B	D	E = C + D	F = (C/D) x 100
Australia	156 293[a]	-25 450[b]	130 843	288 965	419 808	+45
Austria	. .	. .	-15 000	59 200	44 200	-25
Bulgaria	. .	. .	-5 801	82 990	77 189	-7
(Bulgaria) [c]	. .	. .	(-4 657)	(96 878)	(92 221)	(-5)
Canada [d]	. .	. .	. .	. .	. .	. .
Czech Republic	. .	. .	-2 265	165 792	163 527	-1
Denmark	. .	. .	-2 600	52 025	49 425	-5
Estonia	10 351[e]	-8 555 [f]	1 796	37 797	39 593	+5
Finland	72 000[g]	-103 000	-31 000[h]	53 900	22 900	-58
France	12 507[i]	-44 675[j]	-32 168[k]	366 536	334 368	-9
Germany	. .	. .	-20 000	1 014 155	994 155	-2
Greece [l]	. .	. .	. .	. .	. .	. .
Hungary	. .	. .	-4 467	71 673	67 206	-6
(Hungary) [m]	. .	. .	(-3 097)	(83 676)	(80 579)	(-4)
Iceland [l]	. .	. .	. .	. .	. .	. .
Ireland [l]	. .	. .	. .	. .	. .	. .
Italy	3 670	-40 400	-36 730	428 941	392 211	-9
Japan	. .	. .	-90 000[n]	1 173 000	1 083 000	-8
Latvia	6 280	-20 580	-14 300	22 976	8 676	-62
Liechtenstein	. .	. .	-22	208	186	-11
Luxembourg [l]	. .	. .	. .	. .	. .	. .
Monaco [l]	. .	. .	. .	. .	. .	. .
Netherlands	. .	. .	-1 500	167 600	166 100	-1
New Zealand	2 027[o]	-19 730	-17 703	25 476	7 773	-69
Norway	16 900[p]	-27 100	-10 200	35 514	25 314	-29
Poland [l]	. .	. .	. .	. .	. .	. .
(Poland) [p]	(5 480)	(-6 888)	(-1 408)	(478 880)	(477 472)	(~0)
Portugal [l]	. .	. .	. .	. .	. .	. .
Romania [l]	. .	. .	. .	. .	. .	. .
(Romania) [q]	(20 874)	(-23 799)	(-2 925)	(198 479)	(195 554)	(-1)
Russian Federation	183 500	-770 700	-587 200[r]	2 388 720	1 801 520	-25
Slovakia	. .	. .	-4 451	58 278	53 827	-8
Spain	27 645	-50 811	-23 166	227 322	204 156	-10
Sweden	75 434	-109 802	-34 368	61 256	26 888	-56
Switzerland	. .	. .	-4 360	45 070	40 710	-10
United Kingdom [s]	2 567[t]	-8 704	-6 137	577 012	570 875	-1
United States	. .	. .	-436 000	4 957 022	4 521 022	-9
Total [u]	569 174	-1 229 507	-1 246 799	12 361 428	11 114 629	

* See table A.1.

This table summarizes information on the *land-use change and forestry* source/sink category. It aims to present the data provided in a consistent and coherent manner, taking into account the different ways in which Parties reported information for this category. The presentation of this table should improve as the availability of related data increases. Emission estimates were provided for the following sub-categories not specified by the IPCC Guidelines: peat extraction, drainage of wetlands, deep peats and sequestration in peatlands.

[a] Includes emission from forest clearing and on-site burning.
[b] Includes sequestration from grassland conversion (-17,450 Gg) and managed forests (-8,000 Gg).
[c] Emissions/sinks for base year (1988).
[d] Canada did not present emissions/sinks in its most recent 1990 inventory submission but is finishing a study which uses a carbon budget model developed in Canada for boreal forests. The secretariat chose not to present previous estimates from the national communication or from the in-depth review.
[e] Emissions from forest and grassland conversion.
[f] Includes sequestration from "changes in forest and other woody biomass stocks" (-4,647 Gg) and "abandonment of managed lands" (-3,908 Gg).
[g] Emission estimates from cultivated peatlands (3,000-10,000 Gg) and non-viable drainage areas (1,000-5,000) were also provided but not included in this table.
[h] Sequestration in natural peatlands (-500 Gg to - 2,400 Gg) was estimated but not included in the total. The Party also estimated CH_4 emissions of 500-2,400 Gg from natural peatlands.
[i] Includes emissions from forest clearing and on-site burning (4,374 Gg) and grassland conversion (9,240 Gg).
[j] Includes sequestration from abandonment of managed lands (-1,797 Gg).
[k] Takes account of double-counting of 1,467 Gg between forest clearing and grassland conversion reported by the Party.
[l] Parties did not provide estimates for *land-use change and forestry* category.
[m] Emissions for base period (1985-1987).
[n] Includes sequestration in wood products (-10,000 Gg) which, as recommended by the IPCC Guidelines, should not be reported as removals unless a net increase in stocks of forest products can be documented.
[o] Includes CO_2 emissions from biomass.
[p] Emissions/sinks for base year (1988).
[q] Emissions/sinks for base year (1989).
[r] A removal of 587,200 Gg was reported as "managed forest" although the most part of Russian forests are not involved in timber harvesting. In the national communication, a total removal of 734,000 Gg was reported which included sequestration in peatlands (-146,800 Gg), mainly a non-anthropogenic sink, which constitutes a departure from IPCC Guidelines. The natural CH_4 emissions from this subcategory were not included in the Party's inventory.
[s] An estimate of (0 to -1,883 Gg) from conversion of grassland to cultivated lands was also provided but not included in this table.
[t] Emissions from peat extraction, drainage of wetlands and deep peat.
[u] The totals do not include the estimates for non-1990 base years.

Comments

The largest removal was reported in the "managed forests" subcategory by 23 Parties for their 1990 inventories. Poland and Romania so reported for their base years (1988 and 1989, respectively), but did not report emissions/removals in the *land-use change and forestry* category for their 1990 inventories. Some Parties stated that all their forests are managed although for some of them considerable parts may be protected, but the majority did not present information on this issue. This clarification is important because, according to the IPCC Guidelines, emissions from natural forests should not be considered.

For 14 Parties (including Poland and Romania in their reference years) emissions from the managed forests subcategory could also be identified. For the other 12 reporting Parties in the *land-use change and forestry* category, these emissions could not be identified because the Parties either used methods which do not separate emissions from removals (as is recommended by IPCC) or did not present the necessary information.

Many Parties emphasized the large uncertainties associated with emissions removal estimates in this category, as well as the difficulty in estimating and differentiating natural and anthropogenic emissions and removals. Many Parties also mentioned several other methodological and reporting problems in the estimation of removals/emissions in the *land-use change and forestry* category.

For Australia and Estonia the emissions from this category were positive, that is, it represents a CO_2 source rather than a sink. Australia reported high emissions from "forest clearing and on-site burning". France and New Zealand also reported such emissions. Estonia reported emissions from "forest and grassland conversion" (it used 1995 IPCC Guidelines) and France also reported emissions from "grassland conversion". These Parties were the only two to report removals from "abandonment of managed lands". For Australia, unlike Estonia and France, the "grassland conversion" subcategory constitutes a CO_2 removal more than twice higher than "managed forests".

The United Kingdom included in its inventory emissions from peat extraction, drainage of wetlands and deep peat. The Russian Federation included "sequestration in peatland" removals, which account for 146,800 Gg (20 per cent of the reported national removal of 734,000 Gg), but it is mainly a natural sink, which by IPCC Guidelines should not be considered. Finland estimated also this kind of removal (500-2,400 Gg), but did not include it in its inventory.

Ten Parties incorporated in the *land-use change and forestry* subtotal in their national CO_2 emissions. Some Parties expressed concern about this "net" approach, because of the different nature of these emissions in relation to the other CO_2 emissions. In the light of the different ways of reporting used by Parties, emissions from this category were not considered in the CO_2 totals by the secretariat. A comprehensive analysis of emissions and removals was unfeasible due to the lack of information reported. However, for the 22 Parties that reported a net removal in their 1990 inventory, those removals did not offset CO_2 emissions (excluding *land use change and forestry*) by more than 13 per cent. Considering each Party individually (including Poland and Romania for their reference years), removals offset emissions (excluding *land-use change and forestry*) by 25 per cent or more for seven Parties (AUT, FIN, LAT, NOR, NZL, RUS, SWE), by 11 to 5 per cent for eleven Parties (BUL, CHE, DNK, ESP, FRA, HUN, ITA, JAP, LIE, SLO, USA) and by less than 5 per cent for six Parties (CZE, DEU, GBR, NLD, POL, ROM). The increase of CO_2 emissions from this category represented 45 and 5 per cent for Australia and Estonia, respectively.

Table A.4. Anthropogenic emissions of CH_4, 1990 (Gigagrams and percentage of total by Party)

	Energy				Agriculture				Waste		Other ***		Total
	Fuel combustion		Fugitive fuel emissions		Livestock*		Other**						
	(Gg)	(%)	(Gg)	(%)	(Gg)	(%)	(Gg)	(%)	(Gg)	(%)	(Gg)	(%)	(Gg)
Australia	28	0.4	1 026	16.4	3 005	48.1	396	6.3	1 391	22.3	397	6.4	6 243
Austria	24	4.0	92	15.2	259	42.9	..		228	37.9	..		603
Bulgaria	11	0.8	249	18.2	245	17.9	6	0.5	856	62.5	2	0.1	1 370
(Bulgaria)[a]	(56	4.0)	(315	22.3)	(299	21.2)	(8	0.6)	(732	51.8)	(2	0.1)	(1 413)
Canada	42	1.4	1 322	42.8	892	28.9	..		795	25.7	38	1.2	3 088
Czech Republic	59	6.3	531	56.4	195	20.7	..		151	16.0	6	0.6	942
Denmark	11[b]	2.8	11	2.8	263	64.6	..		122	29.9	..		407
Estonia	3	1.0	217	67.2	60	18.6	..		42	13.1	~0	0.1	323
Finland	19	7.5	..[c]		94	37.3	..		139	55.2	..		252
France	184	6.4	311	10.7	1 612	55.7	37	1.3	749	25.9	3	0.1	2 896
Germany	205	3.6	1 549	27.3	2 044	36.0	..		1 870	32.9	14	0.2	5 682
Greece	19	5.6	39	11.4	165	48.0	10	2.9	110	32.1	..		343
Hungary	6	1.0	366	67.2	170	31.2	3	0.6	..[d]		..		545
(Hungary)[e]	(8	1.2)	(448	67.5)	(205	30.9)	(4	0.6)	..		..		(664)
Iceland	~0	0.9	..		12	51.5	..		11	47.6	..		23
Ireland	5	0.7	10	1.3	603	75.8	41	5.1	136	17.1	..		796
Italy	66	1.7	348	8.9	1 541	39.5	319	8.2	1 611	41.3	16	0.4	3 901
Japan	25	1.8	100	7.2	520	37.6	267	19.3	470	34.0	..		1 382
Latvia	2	1.5	2	1.1	111	70.0	..		44	27.4	..		159
Liechtenstein[f]	..		..		..		..		..		..		1
Luxembourg	1	2.7	2	6.9	18	74.3			4	16.2	..		24
Monaco[g]	..		..		..		..		..		..		..
Netherlands	30	2.8	149	14.1	500	47.2	..		381	35.9	..		1 060
New Zealand	8	0.4	24	1.2	1 513	76.2	~0	0.0	433	21.8	7	0.4	1 986
Norway	17	5.9	14	4.8	91	31.4	..		167	57.6	1	0.3	290
Poland[h]	..		..		..		..		..		..		6 100
(Poland)[h]	(39	1.3)	(1 222	40.2)	(861	28.3)	(1	0.0)	(906	29.8)	(12	0.4)	(3 042)
Portugal	13	5.7	2	0.9	163	72.0	13	5.7	35	15.5	~0	0.2	226
Romania[i]	..		..		..		..		..		..		1 954
(Romania)[i]	(45.8	2.0)	(1 416	60.8)	(576	24.7)	(34	1.5)	(241	10.4)	(16	0.7)	(2 328)
Russian Federation	..		19 600[k]	72.6	4 900	18.1	100	0.4	2 400	8.9	..		27 000
Slovakia	21	6.1	96	27.7	171	49.3	1	0.3	53	15.3	5	1.4	347
Spain	76	3.5	695	32.3	772	35.9	115	5.4	491	22.8	2	0.1	2 151
Sweden	33	10.0	..[c]		196	59.6	..		100	30.4	..		329
Switzerland	9	2.7	15	4.4	214	64.6	25	7.5	69	20.7	~0	0.1	332
United Kingdom	74	1.6	1 238	27.3	1 129	24.9	12	0.3	2 078	45.9	..		4 531
United States	613	2.3	7 641	28.3	8 088	30.0	508	1.9	10 150	37.6	..		27 000
Total[l]	1 604	1.7	35 648	37.8	29 546	31.4	1 854	2.0	25 086	26.6	493	0.5	102 286

* Includes enteric fermentation and animal wastes.

** Includes rice cultivation, agricultural soils, agricultural waste burning and savannah burning.

*** Includes *solvent use, industrial processes* and *land-use change and forestry*. Emission estimates were provided for the following source/sink categories not addressed by the IPCC Guidelines: *industrial processes*, including iron and steel manufacturing, carbon black production and industrial incineration, inorganic chemical (carbide) manufacturing, as well as compost, food processing, sewage sludge from landfills, agricultural soils and drinking water treatment.

[a] Emissions for base year (1988).
[b] The electricity import correction of 0.1 Gg was subtracted by the secretariat from the subtotal given in the communication.
[c] Methane emissions from refineries were included in NMVOC emissions estimates.
[d] No activity/production data available.
[e] Emissions for base period (1985-1987).
[f] The secretariat chose to report the emissions total only, as the Party used the CORINAIR reporting format in providing its 1990 inventory data.
[g] The Party did not provide estimates but indicated that emissions were negligible.
[h] Emissions for base year (1988).
[i] Estimate calculated by the secretariat using per capita emissions and population figures provided by the Party.
[j] Emissions for base year (1989).
[k] Includes emissions from consumption (fuel combustion).
[l] The percentage of the total accounted for by each category is calculated on the basis of the overall total with the exclusion of Liechtenstein, Poland and Romania (94,231 Gg) since data for the individual categories for these Parties are not included in this table.

Comments

Fugitive fuel emissions (oil and natural gas system and coal mining) and *agriculture* (enteric fermentation and animal waste) were identified as the largest sources of CH_4 emissions, followed by *waste* (landfills) which also represented a significant share of total CH_4 emissions for most Parties.

Annex II countries and Parties in the process of transition to a market economy have different CH_4 emission patterns as shown in the figures below. The share of CH_4 fugitive fuel emissions in the economies in transition countries (68.6 per cent) is much higher than in the Annex II countries (23 per cent). This big difference is mainly due to the high share of fugitive fuel emissions in the Russian Federation, where they account for 72.6 per cent of its total CH_4 emissions. Besides this high value, in Estonia (67.2 per cent), Hungary (67.2 per cent) and the Czech Republic (56.4 per cent) the proportion of these emissions is higher than in Canada, the Annex II country with the highest fugitive CH_4 emissions (43 per cent). For all these countries, this category was the largest. Another 22 Parties reported fugitive fuel emissions from oil/gas or coal production or from both, but the share is not homogeneous. It is less than 10 per cent for 10 of them and it ranges between 10 and 40 per cent for the other 12. Finland and Sweden did not report CH_4 emissions for this category because they included them with NMVOC emissions.

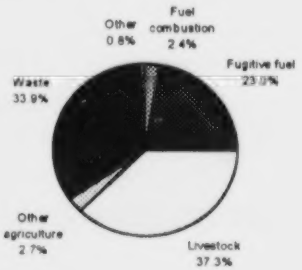
Livestock was the most important source of CH_4 emissions for 18 reporting Parties, the proportion being from 36 to 76 per cent of the CH_4 totals. For five Parties (IRE, LAT, LUX, NZL, POR) the share of these emissions was higher than 70 per cent. New Zealand had the highest value among them with 76.2 per cent. It was lower than 25 per cent only for five Parties. Of them, Bulgaria had the lowest value with 17.9 per cent.

Waste was the most important source of CH_4 emissions for six Parties (BUL, FIN, GBR, ITA, NOR, USA). Their emissions range from 62.5 per cent for Bulgaria to 37.6 for the United States. Eleven countries have *waste* emission shares lower than 25 per cent. The Russian Federation has the lowest share, 8.9 per cent. The other 11 Parties reporting CH_4 emissions in the waste category have a share ranging from 25 to 47.6 per cent.

Rice production emissions were reported by 11 Parties, but their share of total CH_4 emissions is less than 9 per cent for all but Japan, where it is almost 20 per cent. The 11 reporting Parties constitute 91 per cent of the Parties which have rice production. Only Romania did not report rice production emissions in its 1990 inventory, but did so for its reference year. Twelve Parties reported emissions from agricultural waste burning and Australia and New Zealand from savannah burning.

Information was scarcer on emissions from *industrial processes*, with only ten Parties reporting. Seven Parties presented emissions from *land-use change and forestry*.

Annex II countries



Economies in transition

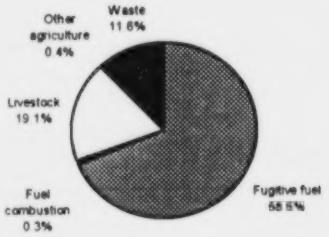


Table A.5. Anthropogenic emissions of N_2O, 1990 (Gigagrams and percentage of total by Party)

	Energy				Industrial processes		Agriculture*		Waste		Other**		Total
	Transport		Other										
	(Gg)	(%)	(Gg)	(%)	(Gg)	(%)	(Gg)	(%)	(Gg)	(%)	(Gg)	(%)	(Gg)
Australia	2.3	3.8	1.3	2.1	0.8	1.3	52.4	87.1	..		3.4	5.7	60.1
Austria	0.5	11.6	0.9	23.7	0.6	15.0	2.0	50.9	..		..		4.1
Bulgaria	0.2	1.1	4.4	19.7	9.6	42.8	8.2	36.4	..		..		22.5
(Bulgaria)[a]	(0.2	0.6)	(6.7	21.8)	(10.4	33.8)	(13.4	43.5)	..		..		(30.8)
Canada	33.6	35.2	10.9	11.4	37.1	38.8	10.7	11.2	0.1	0.1	2.9	3.0	95.5
Czech Republic	1.0	4.2	18.0	75.0	3.0	12.5	2.0	8.3	..		..		24.0
Denmark	0.4	3.9	1.4[b]	13.6	..		8.5	82.5	..		..		10.3
Estonia	~0.0	1.7	1.4	59.6	..		0.9	38.7	..		..		2.4
Finland	5.0	22.7	2.0	9.1	3.0	13.6	12.0	54.5	..		..		22.0
France	4.1	2.3	7.5	4.2	102.5	58.0	61.3	34.7	1.2	0.7	0.1	0.1	176.7
Germany	11.0	3.9	26.0	12.3	83.0	39.3	81.0	38.4	4.0	1.9	6.0	2.8	211.0
Greece	1.2	9.0	2.5	18.3	2.4	17.6	7.5	55.2	..		..		13.7
Hungary	..		7.3[c]	63.9	..		4.1	36.1	..		..		11.4
(Hungary)[d]	..		(8.4[c]	65.1)	..		(4.6	35.7)	..		..		(12.9)
Iceland	~0.0	5.3	~0.0	7.0	..		0.5	87.7	..		..		0.6
Ireland	0.2	0.4	2.6	6.1	..		39.5	93.4	..		..		42.3
Italy	3.5	2.9	38.2	31.8	14.8	12.3	58.7	48.8	0.1	0.1	5.0	4.2	120.3
Japan	13.2	23.9	8.7	15.8	22.7	41.1	4.7	8.5	5.9	10.7	..		55.2
Latvia	0.1	4.6	0.9	38.7	..		1.4	56.7	..		..		2.4
Liechtenstein[e]	..		..		..		..		..		..		0.1
Luxembourg	~0.0	7.3	0.1	9.7	..		0.5	79.3	~0.0	3.7	..		0.6
Monaco[f]	..		..		..		..		..		..		..
Netherlands	5.0	9.7	1.2	2.3	18.2	35.3	22.2	43.1	0.7	1.4	4.3[g]	8.3	51.5
New Zealand	0.4	2.1	2.0	11.7	..		14.1	82.4	0.6	3.5	0.1	0.3	17.1
Norway	1.0	6.7	1.0	6.7	7.0	46.7	6.0	40.0	..		..		15.0
Poland[e]	..		..		..		..		..		..		156.0
(Poland)[h]	(1.6	2.7)	(5.5	9.3)	(20.3	34.5)	(31.5	53.5)	..		..		(58.9)
Portugal	0.4	3.8	4.6	43.8	1.9	18.1	3.6	34.3	..		..		10.5
Romania	..		..		..		..		..		..		106.8[i]
(Romania)[j]	(0.3	0.4)	(16.6	24.9)	(24.4	36.6)	(25.3	37.9)	..		..		(66.7)
Russian Federation	9.4	10.5	16.9	18.9	3.0	3.3	60.0	67.0	0.3	0.3	..		89.6
Slovakia	0.2	1.2	3.6	22.5	2.1	13.1	8.8	55.1	..		1.3[g]	8.1	16.0
Spain	2.1	2.2	18.0	19.1	10.4	11.1	63.4	67.5	0.1	0.1	..		93.9
Sweden	0.4	2.6	4.2	27.7	2.7	17.7	7.9	51.9	..		..		15.2
Switzerland	1.1	7.2	0.3	1.6	0.3	2.0	13.4	85.5	0.2	1.4	0.3	2.2	15.6
United Kingdom	1.8	1.7	3.0	2.7	93.0	85.9	10.5	9.7	..		..		108.3
United States	92.3	22.4	35.1	8.5	96.1	23.4	187.9	45.7	..		..		411.4
Total[k]	190.5	11.1	223.9	13.0	514.2	29.9	753.7	43.8	13.2	0.8	23.4	1.4	1 982.1

*Includes rice cultivation, agricultural waste burning and savannah burning. **Includes *solvent use* and *land-use change and forestry*. Emissions estimates were provided for the following source/sink categories not specified in the IPCC Guidelines: solvent use, caprolactam production, non-fertilizer induced emissions from agricultural soils, polluted inland and coastal waters, waste water treatment and animal wastes.

[a] Emissions for base year (1988).
[b] The electricity import correction of 0.2 Gg was subtracted by the secretariat from the subtotal given in the communication.
[c] Includes emissions from transport.
[d] Emissions for base period (1985-1987).
[e] The secretariat chose to report the emissions total only, as the Party used the CORINAIR reporting format in providing its 1990 inventory.
[f] The Party did not provide estimates but indicated that emissions were negligible.
[g] Emissions from polluted inland and/or coastal waters were reported as an additional source/sink category.
[h] Emissions for base year (1988).
[i] Estimate calculated by the secretariat using per capita emissions and population figures provided by the Party.
[j] Emissions for base year (1989).
[k] The percentage of the total accounted for by each category is calculated on the basis of the overall total with the exclusion of Liechtenstein, Poland and Romania (1,719.2 Gg) since data for the individual categories for these Parties are not included in this table.

Comments

The largest source of N_2O emissions was agriculture (fertilizer use), followed by *industrial processes* and *energy* (transport and other).

Agriculture represented 43.8 per cent of total N_2O emissions. Although the level of reporting was high, with 29 Parties reporting emissions from the use of nitrogenous fertilizer and manure, in general there was a high level of uncertainty associated with these estimates. Agriculture was the largest source of emissions for 18 Parties, accounting for more than 50 per cent of total N_2O emissions in most cases.

Industrial processes were the second greatest source of N_2O emissions, representing 29.9 per cent of aggregate emissions. For six Parties *industrial processes* constituted the largest source of emissions, ranging from 39 to 86 per cent of their total emissions, with Germany (58 per cent) and the United Kingdom (86 per cent) having the highest percentages. Although the quality of estimates was higher than for *agriculture* the degree of reporting was lower, with eight Parties not reporting emissions from *industrial processes* and only aggregate N_2O estimates available for three Parties. As several of the Parties not reporting emissions from *industrial processes* are industrialized countries the percentage of *industrial processes* in total N_2O emissions could possibly be higher than indicated here. Although 28 reporting Parties produce nitrogen fertilizer, only 15 Parties reported N_2O emissions from the inorganic chemicals subcategory. N_2O emissions from organic chemical industries were specifically reported only by four Parties.

As for *industrial processes*, the estimates for the *energy* category were of medium quality but as with other categories the quality and uncertainty varied amongst Parties. Five Parties reported *energy* as the largest source of emissions, and of the Parties reporting emissions from transport, estimates ranged from as low as 0.4 per cent to as high as 35 per cent. For some parties energy-related emissions other than from transport represented a large proportion of their N_2O emissions. The emissions from the "other" *energy* category for the majority of Parties come from the energy and transformation industries and industry subcategories.

Table A.6. Anthropogenic emissions from international bunkers, 1990 (Gigagrams)

	CO_2	CO_2 bunker emissions as % of total national CO_2 emissions	CH_4	N_2O	CO	NO_x	NMVOC
Australia	6 281	2	0.13	0.19	6.80	70.81	2.28
Austria [a]	..	..	..	..	..	..	..
(Bulgaria) [b]	(162)	(~0)	..	..	..	..	..
Canada	5 680	1	2.27	2.05	37.80	17.70	10.70
Czech Republic [a]	..	..	..	..	..	..	..
Denmark	4 975	10	0.10	0.20	17.30	71.10	2.70
Estonia [a]	..	..	..	..	..	..	..
Finland	2 800	5	1.00	1.00	..	22.00	..
France	8 586	2	0.10	0.20	20.80	110.50	5.30
Germany	19 569	2	..	..	96.00	206.00	26.00
Greece [c]	11 730	14	..	..	..	..	..
Hungary [a]	..	..	..	..	..	..	..
Iceland	294	14	..	..	1.10	2.50	0.20
Ireland	1 172	4	0.10	0.16	2.19	5.35	0.36
Italy	12 451	3	0.70	2.44	23.22	250.02	1.22
Japan [c]	31 000	3	..	..	..	..	..
Latvia [a]	..	..	..	..	..	..	..
Liechtenstein [a]	..	..	..	..	..	..	..
Luxembourg [a]	..	..	..	..	..	..	..
Monaco [a]	..	..	..	..	..	..	..
Netherlands [c]	40 400	24	..	..	..	..	..
New Zealand	2 413	9	0.22	0.50	5.56	26.96	..
Norway	1 800	5	0.40	0.10	2.90	32.80	1.20
(Poland) [b]	(530)	(~0)	(0.10)	(~0)	(25.00)	(10.00)	(0.60)
Portugal	3 938	9	0.60	0.20	243.20	43.00	32.20
Romania [a]	..	..	..	..	..	..	..
Russian Federation [a]	..	..	..	..	..	..	..
Slovakia [a]	..	..	..	..	..	..	..
Spain	18 024	8	2.03	0.30	17.01	271.87	11.43
Sweden	4 190	7	1.30	0.04	44.00	60.00	15.00
Switzerland [c]	2 160	5	..	..	..	..	..
United Kingdom	20 729	4	0.44	0.18	26.90	249.51	3.40
United States [c]	82 942	2	..	..	..	..	..
Total [d]	281 134	3	9.38	7.56	544.78	1 440.11	111.99

[a] Party did not report emission estimates from bunker fuels.
[b] Party did not provide 1990 emission estimates from bunker fuels. Estimates in parentheses correspond to the base year (1988).
[c] Party reported only CO_2 emission estimates from bunker fuels.
[d] The percentage of total national CO_2 emissions is calculated on the basis of the overall total with the exclusion of the 13 Parties which did not provide 1990 estimates for emissions from bunker fuels.

Comments

Twenty Parties provided emission estimates for bunker fuels, the majority reporting such information separate from total CO_2 emissions in accordance with the guidelines. Five Parties reported only CO_2 emissions from bunker fuels. Of the nine countries with economies in transition, only Bulgaria and Poland reported emissions from bunker fuels and only for their base year.

CO_2 emissions from bunker fuels represented between 4 and 14 per cent of national CO_2 emissions for the majority of the Parties, but ranged as high as 24 per cent for the Netherlands. Aggregate CO_2 emissions from bunker fuels represented 2.8 per cent of the national emissions of those Parties reporting emissions.

For the majority of the 15 Parties reporting NO_X emissions from bunker fuels these emissions represented between 6 and 26 per cent of national NO_X emissions. Bunker fuel emissions of CH_4, N_2O, CO and NMVOC represented less than one per cent of national emissions for most of the reporting Parties.

Table A.7. Anthropogenic emissions of other greenhouse gases, 1990[a] (Gigagrams)

	HFCs			PFCs			SF_6	CO_2 equivalent of other greenhouse gases (IPCC-1994 GWPs, 100 year time-horizon)	Other greenhouse gases as % of all greenhouse gases
	HFC 134a	HFC 23a	HFC 152a	CF_4		C_2F_6			
Australia	..	..	..	0.580	..	0.0400	..	4 154	0.9
Canada	..	..	..	0.814	..	0.0740	0.120	9 095	1.6
Denmark	..	..	..	..	..	..	0.009	224	0.3
Germany	..	..	..	1.000	..	0.1500	0.500	20 625	1.7
Iceland	..	..	..	..	0.045 [b]	..	..	297	9.2
Italy	..	..	..	0.014	..	0.0014	..	106	~0.0
Netherlands	..	..	..	0.516	..	0.0516	..	3 896	1.8
New Zealand	..	..	..	..	0.100 [b]	..	..	661	0.8
Norway	..	..	0.003	0.369	..	0.0160	0.092	4 816	9.2
Sweden	..	..	..	..	0.060 [b]	..	0.040	1 393	1.8
United Kingdom	..	..	..	..	0.274	..	0.0280	2 076	0.3
United States	..	4.16	0.170	2.450	..	0.2400	0.940	92 201	1.6
Total (of reporting Parties)	..	4.16	0.173	6.017	0.205	0.6010	1.701	139 544	1.4

[a] Austria, Bulgaria, the Czech Republic, Estonia, Finland, France, Greece, Hungary, Ireland, Japan, Latvia, Liechtenstein, Luxembourg, Monaco, Poland, Portugal, Romania, the Russian Federation, Slovakia, Spain and Switzerland did not report emissions for these gases.

[b] Parties reported only aggregate PFC estimates; the secretariat assumed that approximately 5 per cent of these emissions are C_2F_6 and the remaining 95 per cent CF_4.

Comments

Only 12 Parties reported emissions estimates for PFCs and very few Parties reported emissions of HFCs and SF_6. However, Parties did recognize the need to provide information on "other" greenhouse gases, although some of them have not established controls on HFC imports. The information provided on HFCs and PFCs was not always given per type of gas, which would be useful in the light of their different GWPs. None of the countries in transition to a market economy provided such estimates for "other" greenhouse gases.

Most Parties having aluminium production reported PFC emission estimates whereas, only some Parties having magnesium production reported SF_6 emissions.

For the majority of Parties reporting emissions, "other" greenhouse gases represented less than 2 per cent of the GWP of all greenhouse gases. However, for Iceland and Norway these gases represented more than 9 per cent of the GWP on account of the relative size of aluminium production in those countries and, in the case of Norway, magnesium production as well.

Table A.8. Anthropogenic emissions of precursor gases, 1990 (Gigagrams)

	CO	NO_x	NMVOC
Australia	26 074	1 874	2 236
Austria	1 683	225	415
Bulgaria	893	499	102
(Bulgaria)[a]	(827)	(486)	(132)
Canada	10 223	2 089	2 104
Czech Republic	685	864	313
Denmark	766	269	173
(Denmark)[b]	(767)	(293)	(173)
Estonia	186	94	23
Finland	487	295[c]	219
France	10 952	1 722	2 424
Germany	10 743	2 640[c]	3 155
Greece	1 480	338	236
Hungary[d]	734	200	143
(Hungary)[e]	(743)	(231)	(205)
Iceland	26	20	6
Ireland	429	115	197
Italy	9 333	2 128	2 401
Japan	2 833	1 889	2 030
Latvia	363	90	63
Liechtenstein[f]	2	1	2
Luxembourg	171	23	19
Monaco[g]	..	..	..
Netherlands	1 061	580	444
New Zealand	711	106	..
Norway	941	229	266
Poland[f]	7 400	1 450	1 290
(Poland)[h]	(1 546)	(1 588)	(602)
Portugal	1 083	214	206
Romania[i]	3 179	520	1 084
(Romania)[j]	(2 337)	(553)	(529)
Russian Federation	8 100	3 000	4 100
Slovakia	489	227	147
Spain	4 725	1 189	1 121
Sweden	1 612	374	539
Switzerland	707	166	292
United Kingdom	6 682	2 740	2 540
United States	82 674	21 362	19 123
Total[k]	197 427	47 534	47 411

[a] Emissions for base year (1988).
[b] Emissions adjusted for electricity import correction for 1990 as presented by Party.
[c] Estimates from the Party expressed as NO_2.
[d] Estimates from the Party correspond to 1991.
[e] Emissions for base period (1985-1987).
[f] Party used CORINAIR reporting format in providing its 1990 inventory.
[g] Party did not provide estimates but indicated that emissions were negligible.
[h] Emissions for base year (1988).
[i] Estimate calculated by the secretariat using per capita emission and population figures provided by the Party.
[j] Emissions for base year (1989).
[k] The totals do not include the adjusted estimates and emissions for non-1990 base years.

Comments

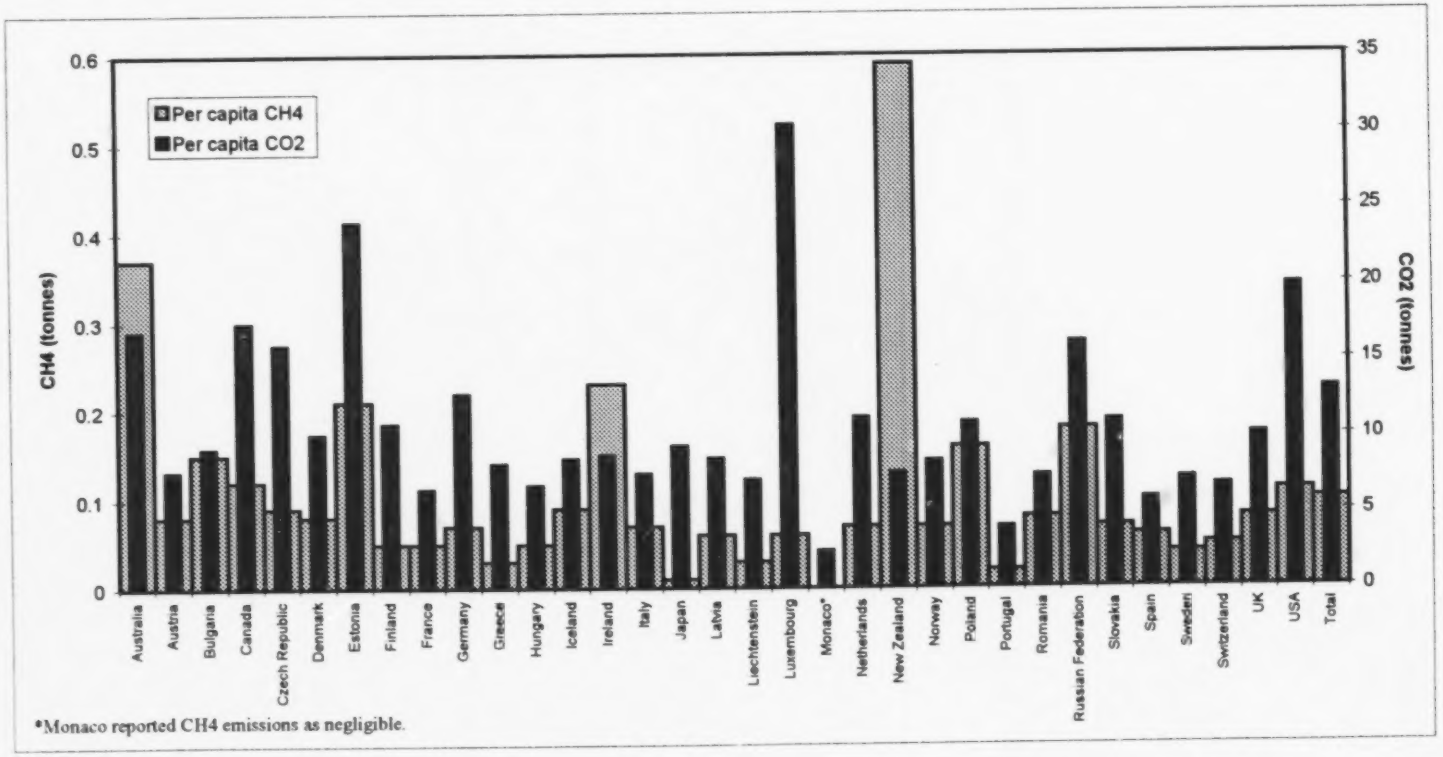
Parties were encouraged to provide information on ozone precursors and the vast majority of Parties (32) did so. Only Monaco did not provide estimates, but indicated that emissions were negligible. Although information was provided for aggregate emissions and to a good degree for emissions from energy-related activities and *industrial processes*, the information available for the *agriculture*, *land-use change and forestry*, and *waste* categories was limited and entailed a high level of uncertainty. The largest source of emissions of precursor gases was energy-related activities, specifically transport. There was a high level of reporting of NMVOC emissions from ***solvent use***, confirming solvent use as a major source of such emissions. NMVOC emissions from ***solvent use*** for most Parties represented between 18 and 39 per cent of total NMVOC emissions and this share may in reality have been higher considering that 10 Parties did not report emissions for this category.

Table A.9. Per capita CH_4 and CO_2 emissions, 1990

	Population (1990)	Per capita CH_4 (tonnes)	Per capita CO_2 (tonnes)
Australia	17 086 000	0.37	16.91
Austria	7 712 000	0.08	7.68
Bulgaria	9 011 000	0.15	9.21
Canada	26 522 000	0.12	17.44
Czech Republic	10 362 000	0.09	16.00
Denmark	5 140 000	0.08	10.12
Estonia	1 571 000	0.21	24.06
Finland	4 986 000	0.05	10.81
France	56 440 000	0.05	6.49
Germany	79 479 000	0.07	12.76
Greece	10 048 000	0.03	8.17
Hungary	10 553 000	0.05	6.79
Iceland	255 000	0.09	8.52
Ireland	3 503 000	0.23	8.77
Italy	57 062 000	0.07	7.52
Japan	123 537 000	0.01	9.35
Latvia	2 683 000	0.06	8.56
Liechtenstein	29 000	0.03	7.17
Luxembourg	373 000	0.06	30.41
Monaco	29 000	..	2.45
Netherlands	14 943 000	0.07	11.22
New Zealand	3 346 000	0.59	7.61
Norway	4 242 000	0.07	8.37
Poland	38 180 000	0.16	10.87
Portugal	10 525 000	0.02	4.00
Romania	23 200 000	0.08	7.38
Russian Federation	148 263 000	0.18	16.11
Slovakia	5 300 000	0.07	11.00
Spain	38 959 000	0.06	5.83
Sweden	8 559 000	0.04	7.16
Switzerland	6 712 000	0.05	6.71
United Kingdom	57 237 000	0.08	10.08
United States	249 975 000	0.10	19.83
Total	1 045 667 000	0.10	13.09

Comments

Per capita CO_2 emissions for the majority of Parties amounted to between 7 and 17 tonnes but varied considerably from as low as 2.5 to as high as 30 tonnes. Per capita CH_4 emissions also varied substantially from 0.01 to 0.59 tonnes. Not only are the size of the population and economy of importance but also the relative energy balance of Parties (see table A.10). In general, Parties with less fossil fuel intensive economies had lower per capita CO_2 and CH_4 emissions.



*Monaco reported CH4 emissions as negligible.

Table A.10. **Total primary energy supply by energy type, 1990[a] (percentage)[b]**

	Coal	Oil[c]	Gas	Nuclear	Hydro	Other[d]	All fossil fuels
Australia	40	37	17	0	1	5	94
Austria	16	42	20	0	10	12	78
Bulgaria	32	33	18	14	1	3	83
Canada	12	37	26	9	12	4	75
Czech Republic	65	18	11	7	0	0	93
Denmark	33	48	10	0	0	9	91
Estonia	64	31	11	0	0	-6	106
Finland	19	35	8	18	3	18	61
France	9	40	11	37	2	0	61
Germany	36	36	15	11	0	1	87
Greece	37	59	1	0	1	3	97
Hungary	23	29	31	12	0	4	83
Iceland	3	34	0	0	17	46	37
Ireland	35	47	18	0	1	0	99
Italy	9	59	25	0	2	4	94
Japan	17	59	10	12	2	0	86
Latvia	13	0	65	0	12	9	79
Luxembourg	32	46	12	0	0	10	90
Netherlands	13	37	46	1	0	2	97
New Zealand	8	29	28	0	14	20	65
Norway	4	40	9	0	48	-2	53
Poland	77	14	9	0	0	1	99
Portugal	17	71	0	0	5	7	88
Romania	19	30	46	0	2	3	95
Russia	19	29	46	3	2	2	93
Slovakia	10	40	26	20	1	3	76
Spain	22	53	6	16	2	1	81
Sweden	6	31	1	37	13	11	39
Switzerland	1	54	7	25	10	3	62
United Kingdom	30	38	22	8	0	1	91
United States	24	40	23	8	1	4	86

[a] *Source*: International Energy Agency.

[b] As the total primary energy supply (TPES) of the various energy types is made up of indigenous production + (imports-exports) - international marine bunkers and ± stock changes the relative percentages may be negative in some cases and the relative percentages do not necessarily sum to 100.

[c] Includes crude oil (crude oil, refinery feedstocks, natural gas liquids and liquid hydrocarbons of origin other than crude oil) and petroleum products (ethane, LPG, refinery gas, aviation gasoline, motor gasoline, jet fuels, kerosene, gas/diesel oil, residual fuel oil, naphtha, white spirit, lubricants, bitumen, paraffin waxes, petroleum coke and other petroleum products).

[d] Includes energy from geothermal, photovoltaic, wind and tidal power plants; heat production from combined heat and power plants (CHP), autoproducer's heat sold to third parties, and district heating production; and final consumption and trade in electricity.

Comments

Among Parties, the relative percentage of energy types varied considerably, although for the majority fossil fuels as a group represented more than 70 per cent of the fuel mix. In addition to economic and social considerations, the relative percentage of each fuel type is to a certain degree dependent on each Party's natural resource endowment. More than 60 per cent of Parties had some hydro energy supply and half had nuclear energy supply.

Figure A.1. Proportion of different greenhouse gas emissions by Party*
(Percentage)

*Excludes *land-use change and forestry*. "Other" includes PFCs, HFCs and SF_6. IPCC 1994 GWP values with a time horizon of 100 years were used by the secretariat for comparative purposes.

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Table B.1. Projected anthropogenic emissions of CO_2, excluding land-use change and forestry (Gigagrams)

	Data from inventory	Data from projection		Variations		Updated variations from projection based on in-depth reviews [e]
	Base level[a]	Base level[b]	2000 level[c]	from inventory	from projection	
	(Gg)	(Gg)	(Gg)	(Percentage)		(Percentage)
Australia	288 965	288 965	332 799	15.1	15.1	-
Austria	59 200	59 900	65 800	11.1	9.8	-
Bulgaria[d] (1990)	82 990	82 990	69 898	-15.8	-15.8	..
Bulgaria (1988)	96 878	96 878	69 898	-27.9	-27.9	..
Canada	462 643	461 200	510 000	10.2	10.6	12.5
Czech Republic	165 792	163 584	135 536	-18.2	-17.1	-
Denmark	52 025	58 353	53 753	3.3	-7.9	-
Estonia	37 797	37 800	17 500 - 23 000	(-53.7) - (-39.2)	(-53.7) - (-39.2)	-
Finland	53 900	54 200	70 200	30.5	29.5	-
France	366 536	383 167	397 833	8.5	3.8	..
Germany	1 014 155	1 014 155	917 000	-9.6	-9.6	-
Greece	82 100	82 100	94 500	15.1	15.1	..
Hungary (1990)	71 673	69 116	68 741	-4.1	-0.5	..
Hungary[d] (1985-87)	83 676	81 534	68 741	-17.8	-15.7	..
Iceland	2 172	2 172	2 282	5.1	5.1	..
Ireland	30 719	30 719	36 988	20.4	20.4	<
Italy	428 941	423 776	482 440	12.5	13.8	..
Japan	1 155 000	1 173 000	1 200 000	3.9	2.3	-
Latvia	22 976	22 976	16 956	-26.2	-26.2	<
Liechtenstein	208	208	245	18.1	18.1	..
Luxembourg	11 343	11 244	7 556	-33.3	-32.8	..
Monaco	71	..	..	..	..	..
Netherlands	167 600	174 000	167 600	0.0	-3.7	>
New Zealand	25 476	25 530	29 160 - 29 940	14.5 - 17.5	14.2 - 17.2	>
Norway	35 514	35 400	39 500	11.2	11.6	14
Poland (1990)	414 930	..	338 000 - 455 000	(-18.5) - (9.7)	..	-
Poland[d] (1988)	478 880	458 000	338 000 - 455 000	..	(-26.2) - (-0.7)	-
Portugal	42 148	38 689	54 274	28.8	40.3	..
Romania (1990)	171 103	..	..	..	..	..
Romania[d] (1989)	198 479	..	..	..	..	..
Russian Federation	2 388 720	2 330 000	1 930 000 - 2 026 000	(-19.1) - (-15.1)	(-17.2) - (-13.0)	-
Slovakia	58 278	57 808	48 639	-16.5	-15.9	..
Spain	227 322	222 908	276 523	..	24.1	15
Sweden	61 256	61 300	63 800	4.2	4.1	-
Switzerland	45 070	45 400	43 800	-2.8	-3.5	-
UK	577 012	586 720	586 720	1.7	0.0	(-8) - (-4)
USA	4 957 022	5 012 789	5 163 136	4.2	3.0	>

[a] Data from inventory table A.1.

[b] Differences in 1990 levels between inventories and projections are, for example, due to revisions of inventories, rounding, calibration of models, or the projection of only a subset of the sources. For some countries (Denmark, France, Netherlands, Switzerland) differences are also due to statistical adjustments.

[c] "With measures" levels for 2000.

[d] Some EIT countries have asked for special consideration under Article 4.6 to use different base years from 1990; Bulgaria (1988), Hungary (average of 1985-1987), Poland (1988) and Romania (1989).

[e] Additional and/or revised information for projections was often provided in the course of in-depth reviews. Where possible, this information is reflected here in the form of revised estimates. A " symbol means that the figures were not substantially changed during the review team's country visit.

Comments

All communications but two gave projections for CO_2 emissions, although some of them included only emissions from energy use of fossil fuels. Seventeen, representing 61 per cent of the 1990 aggregated inventory figure, projected increases from base year levels in 2000, according to the starting points of their projections. Fourteen Parties, which accounted for 38 per cent of the 1990 emissions, projected either a stabilization or a decrease; of them, eight were EITs. The projected growth in emissions is above 10 per cent for 11 Parties. Of the countries that projected decreases, the pattern was different between the EITs and the others. Four EITs that had chosen different base years, had larger decreases compared to these than 1990. One EIT, giving a range of scenarios, also presented a growth scenario compared to 1990. For three of the four countries that made adjustments, eliminating these changed the projections from decreases to stabilization or increases. The IDRs have shown stronger underlying growth for five Parties, while four are expecting lower emissions than reflected in the national communications; two of these are still among those projecting the highest growth. For a number of Parties, the overall implications of changes were not given in terms of clear directions or new figures.

Notes*

Australia: The effect of measures in 2000 (table 6.2, p.74) was subtracted from the reference scenario (table 6.1, p.72) reflecting "delayed or partial implementation, and/or other conditions which reduce the probability of effectiveness. This scenario can be taken to be close to the current rate of implementation" (p.74). In general, Australia assumes that existing measures will continue at the current rate of implementation (p.80). Fiscal years are used.

Austria: The 2000 figures are from the Institute of Economic Research (IER) reference scenario. Process emissions are assumed to be stable (footnote, p.2) and added to pyrogenic emissions. The communication states that the scenario does not represent all policies and measures implemented or committed to; these are not fully quantified and may permit Austria to "stabilize its CO_2 emissions by the time period around 2000 to 2005" (p.4). The scenario includes structural shifts in industry away from energy-intensive primary industries, sustained efforts to improve energy utilization (generating 1.5 per cent energy efficiency improvement per annum) and preferential treatment of less environmentally damaging and renewable resources as opposed to fossil fuels (p.82).

Bulgaria: The "energy policy" scenario was chosen, as this is closest to reflecting implemented policies and measures. "Baseline" and "mitigation" scenarios were also provided.

Canada: Projections (table 13.11, p.128) incorporate "the effects of a number of federal and provincial policies, programs and measures currently in place or in the process of implementation" (p.128). The figure in the "updated variations" column refers to revised projections as reflected in Canada's National Action Program on Climate Change from 1995.

Czech Republic: The figures for 2000 were calculated from percentage decreases projected (12.3 per cent) and additional information (p.14). The estimate of effects of policies and measures implemented (p.27) was subtracted from a scenario described as assuming "slow implementation of measures, or not at all" (p.13).

Denmark: Figures were taken from table 3.2, p.41, of the communication, noting that slightly revised figures were given on p.75. Projections assume *energy* measures (Energy 2000 Follow Up = 1993) yet to be implemented, and current policies in other sectors. The projection figure used for 1990 is adjusted for electricity imports. Figures for 2000 provided in the IDR were slightly lower.

Estonia: Projections were provided after the submission of the communication.

Finland: The projection allows for the construction of Finnish electricity production capacity to replace current imports (p.19), which in 1990 were equivalent to 11 Mt CO_2. The projection figure is considered the most likely option and takes into account energy cuts brought about by taxation, energy conservation, more use of bioenergy and the adoption of new technology.

France: The projection figures are taken from the summary of the national communication where the temperature-adjusted figure for energy-related emissions is given as 104.5 Mt C in 1990 and the 2000 figure is 108.5 Mt C. The scenario includes measures such as a CO_2 tax equivalent to 70 ECU per tonne of carbon.

Germany: Projections for 2000 were submitted separately by 29 April 1996.

Hungary: The average emissions comparable with the projections figures in 1985-1987 were 81,534 Gg. The projections only include fuel-related emissions. The figures assume implementation of the National Energy Efficiency and Energy Improvement Programme (2000 S scenario, table 6.6, p.78). Figures based on other methodologies for emission calculations are also given (pp.73-74).

Iceland: The projections do not include effects of the National Climate Action Plan. The total emissions are "expected to be no more in the year 2000 than they were in 1990" (p.54).

Ireland: A continuation of existing policies would indicate a greater increase ("20 per cent, or an increase of 11 per cent if account is taken of increased carbon capacity" (p.2). Through the IDR indications were given that the growth could be lower than reflected in the projections due to lower GDP growth and higher relative use of natural gases.

Italy: A business-as-usual scenario was chosen (tables 4.4 and 4.5), noting that scenarios for net emissions were given "with measures" (in table 4.8), resulting in lower estimates for 2000. If the projection for *land-use change and forestry* is used to adjust the figures in table 4.8, the "2000 projection" figures would be 438, 440 - 459, 440 Gg, and the "variations from projection", 3.5 - 8.4 per cent.

Japan: The projection is based on the Long-term Energy Supply and Demand Outlook. The projection assumes that "all energy conservation measures incorporated in the Outlook are fully implemented" (p.140) and control measures in *industrial processes* and measures to reduce CO_2 emissions from municipal waste are fully implemented (e.g., waste projection is "based on the assumption that serious efforts will be made to thoroughly recycle paper waste" (p.141)). Fiscal years are used.

Latvia: Information from the IDR suggested that emissions could be even lower in 2000 due to low economic growth.

Luxembourg: Development of emissions in the industrial sector dominates the projections.

Monaco: Monaco reported that CO_2 emissions are unlikely to increase by the year 2000.

Netherlands: The projection takes into account the effects of policies and measures decided prior to the submission of the communication (Energy Policy Scenario, p.59). The 1990 projection figure includes a temperature adjustment. During the in-depth review, information was given that showed a higher growth in emissions than was reflected in the projections.

New Zealand: The figures for 2000 were given as an interval reflecting 2 and 3 per cent growth in GDP. The measures included in the projection are not specified. During the in-depth review, information was given that showed a higher actual growth in the 1990s than was reflected in the projections.

Norway: The projection reflects "current policies" (p.36), including carbon taxes that were implemented in 1991. A revision was made during the in-depth review to account for higher growth than expected, especially in the offshore petroleum sector.

Poland: Poland presented a set of different projections for 2000 based on two approaches. "The presented assessments of future greenhouse gas emissions do not take into account the currently undertaken actions, ... which lead to the further emission reductions" (p.44). These projections are for the energy sector only. The 1988 inventory figure corresponding to the energy section projections would be 462,820 Gg.

Portugal: Projections are for emissions from fuel combustion only.

Romania: No projections were provided.

Russian Federation: The projection figures for 2000 were given as a range of CO_2 emissions for probable and optimistic scenarios based on possible versions of fuel and energy complex development and with consideration for consumption of primary energy and its transformation products in all sectors of the national economy (pp. 50-51). Projections are for emissions from fuel combustion only.

Spain: The projection takes into account only energy-related CO_2. It is based on the reference scenario from the Plan Energético Nacional 91 (PEN 91), and when the effects of measures contained in the Plan de Ahorro y Eficiencia Energética (PAEE) (described in the communication), were taken into account, the projected increase of emissions of CO_2 was reduced from 45 per cent to 24 per cent in 2000 from the 1990 level (p.91). Actual development has not been in line with the assumptions from PEN 91; GDP growth especially has been lower. A revision is therefore envisaged. A revision of the estimates for GDP growth from 1995 to 2000 (3%/year) and of the evaluation of measures in the energy sector leads to a smaller increase in CO_2 emissions from 1990 to 2000 (from 218,000 to 252,502 Gg, as revised during the in-depth review).

Sweden: The projection is based on political decisions made up to the date of submission of the communication (p.63), except for the changes in energy taxes as from 1 July 1994; Sweden notes that if temperature adjustments of 3 Mt CO_2 in the figures for 1990 had been made, projected emissions would have been stable (p.68).

Switzerland: Bunker fuels (2.1 Mt CO_2 in 1990 and 2.5 Mt CO_2 in 2000) are subtracted from the aggregate figures given in the report. The projection includes only measures already implemented or decided as of 1994 (pp.18-20, 74, 152). The inventory figure for 1990 was not adjusted for temperature (p.38), but the projection is based on a temperature-adjusted 1990 level of emissions (p.79).

UK: The "central growth/low fuel price" scenario (among several) is presented as the reference scenario for emissions. This includes an agreement with electric utilities on fuel choice and use of CHP after 1990 (p.17). In this projection emissions increased 10 Mt C. The measures in place are estimated to reduce emissions in 2000 by 10 Mt C, which is subtracted from the projected 2000 level (p.16) and used for the table. A revision was provided during the in-depth review to account for new energy projections indicating CO_2 emissions of 4-8 per cent below 1990 levels by the year 2000.

USA: The projection includes policies and measures proposed by the Administration in the Climate Change Action Plan (technical supplement to the communication, pp.33-60), assuming "that the funding required will be committed" (technical supplement, p.55). The communication notes that some actions which "may yield significant reductions" are not included (p. 187), while economic growth has been more robust and oil prices lower than assumed. During the in-depth review stronger underlying growth in emissions was reported owing to more robust growth in the economy and reduced implementation of the Climate Change Action Plan.

*All references in parentheses are to the national communications.

Table B.2. CO_2 projections in land-use change and forestry[a]

	Data from inventory	Data from projection		Variations from projection
	Base level[b] (Gg)	Base level[c] (Gg)	2000 level[d] (Gg)	(Percentage)
Australia	130 843	130 843	121 992	-6.8
Austria	-15 000	..	..	..
Bulgaria (1990)	-5 801	-5 801	< -5 801	< 0
Bulgaria[e] (1988)	-4 657	-4 657	< -5 801	< 0
Canada	..	..	..	..
Czech Republic	-2 265	-2 300	-2 800	-22.8
Denmark	-2 600	-2 600	-2 600	0
Estonia	1 796	..	..	..
Finland	-31 000	-31 000	(-40 000) - (-23 000)	(-29.0) - (25.8)
France	-32 168	-32 000	-39 000	-21.8
Germany	-20 000	-20 000	-20 000	0
Greece	..	..	..	..
Hungary (1990)	-4 467	..	..	..
Hungary[e] (1985-1987)	-3 097	..	..	..
Iceland	..	..	..	..
Ireland	..	-5 133	-8 066	-57.1
Italy	-36 730	-36 730	-46 730	-27.2
Japan	-90 000	-90 000	-92 000	-2.2
Latvia	-14 300	-14 300	-8 940	37.5
Liechtenstein	-22	..	..	..
Luxembourg	..	..	..	..
Monaco	..	..	..	..
Netherlands	-1 500	-1 500	-1 800	-20.0
New Zealand	-17 703	-17 700	-18 600	-5.1
Norway	-10 200	..	..	..
Poland (1990)	..	..	..	..
Poland[e] (1988)	-1 408	..	..	..
Portugal	..	..	..	..
Romania (1990)	..	..	..	..
Romania[e] (1989)	-2 925	..	..	..
Russian Federation	-734 000	..	..	..
Slovakia	-4 451	..	..	..
Spain	-23 166	-23 170	-25 700	-10.9
Sweden	-34 368	-34 000	-29 000	14.7
Switzerland	-4 360	-5 200	-5 300	-1.9
UK	-6 137	-9 167	~ -9 167	~ 0
USA	-436 000	-476 710	-539 049	-13.1

[a] Negative values in Gg denote removal of CO_2. Positive values denote a net source of emissions. Negative values in percentage denote more removals in 2000 than in 1990, or a decrease in net emissions.

[b] Data from inventory table A.3.

[c] Differences in 1990 levels between inventories and projections are, for example, due to late revisions of inventories, rounding, or the fact that only a subset of the sources was projected.

[d] "With measures" levels for 2000.

[e] Some EIT countries have asked for special consideration under Article 4.6 to use different base years from 1990; Bulgaria (1988), Hungary (average of 1985-1987), Poland (1988) and Romania (1989).

Comments

Eighteen countries gave projections for CO_2 from the land-use change and forestry sector. For seventeen of these, this sector was estimated to be a net removal and was projected to continue that way, while for one it was a net source which was projected to decrease. Fourteen Parties project this removal to be stable or increasing between the base year and 2000, two that it could be reduced and one presented an interval indicating that it could go either way. The variations part on this table illustrates changes in the annual increment in the net contribution from this sector. It should be noted that some Parties have raised questions to whether this is an appropriate indicator, or the only appropriate, arguing that more focus should be put on development of reservoirs (see a discussion in FCCC/SBSTA/1996/9/Add.1).

Notes*

Australia: The effects of measures on biosphere CO_2 (table 6.2, p.74) are subtracted from the "without measures" scenario (table 6.1, p.72).

Bulgaria: Projections showed an increased (23 per cent) sink capacity in 2020-2025.

Czech Republic: It is assumed that the emissions and removals are stable from 1990 to 2000 in a reference case, and the effects of policies and measures in *agriculture* and forestry (p.27) are then subtracted from that level.

Finland: The "increased wood use" scenario for the forest sector (-23 Mt CO_2) is seen as the most likely for this category (p.21). Scenarios for emissions from cultivated peatland and non-viable drainage areas were given in table 11 (p. 24). The addition of these emissions gives a total estimate of 16-27 Mt CO_2, as a net sink in 1990 and 17-39 Mt CO_2 in 2000.

France: The projection figures are taken from the summary of the national communication which indicates a maintained rate of increase of carbon stocks in the forests, while effects of land-use changes are projected to contribute to a reduction of approximately 2 Mt C.

Germany: Projections for 2000 were submitted on 29 April 1996

Ireland: Information from part 4 (p.16). No information was submitted in the inventory section.

Hungary: 1985-1987 level was -3 097 Gg.

Netherlands: Revised figures were given during the IDR.

New Zealand: Revised figures were given during the IDR.

Poland: Poland reports increasing forested area, but does not convert this to CO_2 estimates.

Spain: The projection figure for the year 2000 was provided during the in-depth review.

UK: The projection figure for 1990 only refers to carbon removal from managed forests, which is a subset of the sector. These removals are likely to remain stable (p.37).

USA: The figures assume that sinks represent carbon removals from *land-use change and forestry* (technical supplement to the communication, p.8).

*All references in parentheses are to the national communication.

Table B.3. Projected anthropogenic emissions of CH_4[a]

	Data from inventory	Data from projection		Variations from projection
	Base level[b] (Gg)	Base level[c] (Gg)	2000 level[d] (Gg)	(Percentage)
Australia	6 243	6 244	6 480	3.8
Austria	603	~ 600	~ 600	~ 0
Bulgaria (1990)	1 370	1 006	1 057	5.1
Bulgaria[e] (1988)	1 413	1 119	1 057	-5.5
Canada	3 088	2056	2290	11.4
Czech Republic	942	623	511	-18.0
Denmark	407	406	354	-12.8
Estonia	323	..	..	..
Finland	252	252	204	-19.0
France	2 896	2 900	2 900	0
Germany	5 682	5 682	3 965	-30.2
Greece	343	343	< 343	< 0.0
Hungary (1990)	545	492	278	- 43.5
Hungary[e] (1985-87)	664	605	278	-54.0
Iceland	23	23	22	-5.6
Ireland	796	796	799	0
Italy	3 901	3 900	2 965	-24.0
Japan	1 382	1 380	1 150	-16.7
Latvia	159	159	114	-28.2
Liechtenstein	1	..	..	..
Luxembourg	24	25	26	6.1
Monaco	..	..	..	..
Netherlands	1 060	1 067	786	-26.3
New Zealand	1 986	2 051	≤ 1 931	-5.9
Norway	290	291	278	-4.5
Poland (1990)	6 100	6 100	1 780	-70.9
Poland[e] (1988)	3 042	6 060	1 780	-70.6
Portugal	226	..	..	..
Romania (1990)	1 954	..	..	..
Romania[e] (1989)	2 328	..	..	..
Russian Federation	27 000	..	..	..
Slovakia	347	342	293	-14.3
Spain	2 151	..	..	..
Sweden	329	329	300	-8.8
Switzerland	332	274	256	-6.6
UK	4 531	~ 5 000	4 400	≤ -10.0
USA	27 000	27 669	22 335	-19.3

[a] Figures provided in CO_2 and C equivalents have been converted.

[b] Data from inventory table A.4.

[c] Differences in 1990 levels between inventories and projections are, for example, due to late revisions of inventories, rounding, calibration of models, or the projection of only a subset of the sources.

[d] "With measures" levels for 2000.

[e] Some EIT countries have asked for special consideration under Article 4.6 to use different base years from 1990; Bulgaria (1988), Hungary (average of 1985-1987), Poland (1988) and Romania (1989).

Comments:

Twenty-six Parties gave projections for CH_4, although four of them did not include all sectors. Twenty-three Parties, representing 60 per cent of the aggregated inventory figure for 1990, projected stabilization or decrease of emissions from their base years, thirteen of these decreases of 10 to 70 per cent. Three Parties, representing 9 per cent of the aggregated inventory figure for 1990, projected incr ases compared to their base years.

Notes*

Australia: The effects of measures are subtracted (table 6.3, p.76) from the reference "without measures" scenario (table 6.1, p.72) to obtain a "with measures" projection.

Austria: This is a "without measures" projection (p.88).

Bulgaria: Baseline scenario was chosen as it was seen to come closest to reflecting policies and measures implemented. Emissions from waste were assumed stable at 1990 level (856.1 Gg), while emissions from agriculture were not included.

Canada: The 1990 projection figure only refers to energy-related emissions and landfills and was updated following the IDR. Agriculture is not included.

Czech Republic: Three major sources were projected covering 71 per cent of the inventory figure for 1990 under the assumption that measures will be implemented slowly or not at all (p.14).

France: The projection figure is taken from the summary of the national communication where it was given as 19.4 Mt C equivalent.

Germany: Projections for 2000 were submitted on 29 April 1996

Greece: Overall emissions in 2000 are expected to be below the 1990 level, but no specific projection was provided.

Hungary: The corresponding 1985-1987 figure was 604.9 Gg. The figure does not include emissions from *waste* (fig. 6.6, p. 78). The decline reflects "the collapse of domestic coal mining and ... the significant changes in animal livestock" (p.78). The 2000 S scenario is used.

Italy: Slightly higher projections were given in table 4.8.

Japan: The projection takes into account only the effects of energy conservation and waste reduction measures (table 4-4-1, p.143).

Monaco: Emissions are expected to be negligible in 2000 as in 1990.

Netherlands: The projection takes into account only the effects of policies initiated under the Second National Environmental Policy Plan (NEPP2) and the Second Memorandum on Energy Conservation (p.164).

New Zealand: The 1990 projection figure does not include energy-related emissions or emissions from *land-use change and forestry*. In the 1990 inventory, all other emissions amounted to 2,051 Gg.

Norway: Information obtained during the IDR indicates that emissions could be lower in 2000.

Poland: The 1990 figure is calculated by a different methodology from that used for the 1988 figure.

*All references in parentheses are to the national communications.

Table B.4 Projected anthropogenic emissions of N_2O[a]

	Data from inventory	Data from projection		Variations from projection
	Base level[b] (Gg)	Base level[c] (Gg)	2000 level[d] (Gg)	(Percentage)
Australia	60.1	60.1	61.1	1.5
Austria	4.1	~ 4.2	~ 4.2	~ 0
Bulgaria (1990)	22.5	14.3	16.3	14.0
Bulgaria[e] (1988)	30.8	17.4	16.3	-6.3
Canada	95.5	78.6	84.0	6.9
Czech Republic	24.0	..	..	..
Denmark	10.3	10.5	11.5	9.5
Estonia	2.4	..	..	..
Finland	22.0	23.0	28.0	21.8
France	176.7	177.0	93.0	- 47.0
Germany	211.0	211.0	135.0	-36.0
Greece	13.7	13.7	> 13.7	> 0.0
Hungary (1990)	11.4	7.3	6.2	-14.3
Hungary[e] (1985-87)	12.9	8.4	6.2	-26.2
Iceland	0.6	0.6	0.6	0
Ireland	42.3	42.3	43.7	3.3
Italy	120.3	119.4	123.6	3.5
Japan	55.2	47.0	~ 52.0	8.3
Latvia	2.4	2.4	1.4	-41.6
Liechtenstein	0.1	..	..	..
Luxembourg	0.6	0.7	0.7	0
Monaco	..	..	..	..
Netherlands	51.5	59.6	62.2	4.4
New Zealand	17.1	..	..	~ 0
Norway	15.0	15.6	16.3	4.5
Poland (1990)	156.0	..	61.8	..
Poland (1988)	58.9	73.0	61.8	-15.3
Portugal	10.5	..	..	..
Romania (1990)	106.8	..	..	..
Romania (1989)	66.7	..	..	..
Russian Federation	89.6	..	..	..
Slovakia	16.0	14.7	14.1	-4.1
Spain	93.9	..	..	..
Sweden	15.2	15.2	13.0	-14.6
Switzerland	15.6	0.9	1.5	..
UK	108.3	~ 110.0	~ 30.0	~ -72.7
USA	411.4	529.7	421.0	-20.5

[a] Figures provided in Mt C equivalents have been converted.

[b] Data from inventory table A.5.

[c] Differences in 1990 levels between inventories and projections are, for example, due to late revisions of inventories, rounding, calibration of models, or the projection of only a subset of the sources.

[d] "With measures" levels for 2000.

[e] Some EIT countries have asked for special consideration under Article 4.6 to use different base years from 1990; Bulgaria (1988), Hungary (average of 1985-1987), Poland (1988) and Romania (1989).

Comments

Twenty-six Parties projected emissions of N_2O. One Party provided figures covering a sector that only represented a minor part of the emissions in 1990, while another four did not cover all sources represented in the inventories. Fifteen Parties, representing 58 per cent of the aggregated inventory figure for 1990, projected stabilization or decreases compared to their base years, four of the decreases being more than 35 per cent, often due to expected changes in industrial processes. One only gave an indication that overall emissions were not expected to increase. Nine Parties, representing 26 per cent of the aggregated inventory figures for 1990, projected increases, eight of these less than 10 per cent.

Notes*

Australia: The effects of measures are subtracted (p. 76) from the "without measures" scenario (p.72) to obtain a "with measures" figure.

Austria: This is a "without measures" projection (p.88).

Bulgaria: Baseline scenario was chosen as it was seen to be closest to implemented policies and measures. N_2O from agriculture was not included.

Canada: The projection is updated following the IDR and the figures refer to energy-related and industry emissions, while agriculture is not included.

France: The projection figures are taken from the summary of the communication, where they were given as carbon equivalents.

Germany: Projections for 2000 were submitted on 29 April 1996.

Greece: An increase in emissions is expected for the year 2000, but no specific projection was provided.

Japan: The projection figure for 2000 refers only to the effects of energy conservation and waste reduction measures (p.144).

Monaco: Emissions are expected to be negligible in 2000 as in 1990.

Netherlands: The projection figure for 2000 incorporates the effects of policies and measures initiated under NEPP2. However, a number of policies implemented to reduce N_2O emissions associated with fertilizer application and animal manure have not been incorporated because of a lack of knowledge about their effects (p.65).

Poland: 1990 inventory data were given in the CORINAIR format and no separate figure compatible with the 2000 projection was provided.

Switzerland: The projection figure covers only a minor part of the sources (from transportation) and does not allow for calculation of trends (p.80).

Hungary: The corresponding 1985-1987 inventory figure was 8.36 Gg. The projection figures include fuel-related emissions only. The 2000 S scenario is used (table 6.2 b, p.74).

Poland: Different methods were used for calculating 1988 and 1990 figures. The communication states that the methodology used for 1990 overestimates the emissions and this, rather than a real increase, explains the difference. Therefore a comparison with the 1990 figures appears to be non-applicable.

Romania: No projections were provided.

*All references in parentheses are to the national communications.

Table B.5 Projections for other greenhouse gases

	Base level projections[a]			2000 level			Variations from projections		
	HFCs	PFCs	SF_6	HFCs	PFCs	SF_6	HFCs	PFCs	SF_6
	(CO_2 equivalent in Gg)			(CO_2 equivalent in Gg)			(Percentage)		
Australia	..	4 100	..	..	1 700	..	..	-59	..
Canada	..	10 600	2 990	..	14 100	..	..	33	..
Iceland	0	311	..	26	55	..	>0	-82	..
Italy	0	106	..	2 500	63	..	>0	-41	..
New Zealand	..	700	..	..	700	..	..	~ 0	..
Norway	0.4	2 500	2 300	600	1 700	800	>0	-32	-65
Sweden	0	400	1 000	2 600	400	1 000	>0	~ 0	~ 0
UK	..	2 100	..	..	~ 100	..	..	-95	..
USA	67 500	17 000	..	>120 300	9 700	..	>78	-43	..

[a] For several countries, inventory figures were substantially revised in their 1996 submission, which is the main reason for differences from table A.7. The figures are rounded.

[b] Using 1994 GWPs, time-horizon = 100 years.

Comments

Nine Parties projected emissions of one or more HFCs, PFCs and SF_6. Lack of reporting from several Parties may mean that these did not have emissions of such substances in 1990. Five Parties projected growth in PFCs, in particular as they are replacing ozone-depleting substances. Six Parties projected substantial decreases in HFCs, two gave a stable projection and one an increase. The decreases are often caused by process changes and have been achieved already in several countries. One country projected a substantial decrease in SF_6, while another projected it to be stable.

Notes*

Australia: Estimates of effects of measures were subtracted from the baseline scenario (table 6.5, p.79). The same split between CF_4 and C_2F_6 was assumed in 2000 as in 1990 (table 6.1, p.72).

Canada: Estimates provided during the in-depth review.

Iceland: 90 per cent of PFCs is assumed to be CF_4, 10 per cent C_2F_6.

New Zealand: Emissions of PFCs of 0.1 Gg were reported, largely from aluminium smelting. The secretariat has assumed that approximately 95 per cent was CF_4 and 5 per cent C_2F_6.

Norway: The IDR indicated that HFCs and PFCs could be lower in 2000.

UK: The lowest scenario (reported as most likely) has been chosen.

USA: The IDR report points out that HFCs may grow faster than the 2000 figure indicates.

*All references in parentheses are to the national communications.

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Table B.6. Projected anthropogenic emissions of all greenhouse gases, excluding land-use change and forestry[a]

	Data from inventory	Data from projection		Variations from projection
	Base level (CO_2 equivalent in Gg)[b]	Base level[c] (CO_2 equivalent in Gg)[b]	2000 level (CO_2 equivalent in Gg)[b]	(Percentage)
Australia	465 305	465 275	512 811	10.2
Austria	75 286	- 75 944	- 81 844	- 7.8
Bulgaria (1990)	123 755	112 213	101 011	-10.0
Bulgaria (1988)	141 345	129 862	101 011	-22.2
Canada[a]	577 954	547 324	607 085	10.9
Czech Republic	196 551	178 848	148 056	-17.1
Denmark	65 517	71 660	66 106	-7.8
Estonia	46 479	37 800	17 500 - 23 000	(-53.7) - (-39.2)
Finland	67 114	67 734	84 158	24.2
France	494 032	510 857	498 643	-2.4
Germany	1 241 509	1 220 884	1 057 343	-13.4
Greece	94 888	94 888	107 288	- 13.1
Hungary (1990)	88 674	83 506	77 536	-7.1
Hungary (1985-87)	104 082	99 045	77 536	-21.7
Iceland	3 227	3 227	3 094	-4.1
Ireland	63 757	63 757	70 968	10.6
Italy	563 117	557 640	597 200	7.1
Japan	1 206 523	1 221 850	- 1 244 815	- 1.9
Latvia	27 640	27 640	20 197	-26.9
Liechtenstein	265	208	245	18.1
Luxembourg	12 123	12 081	8417	-30.3
Monaco	71	..	..	..
Netherlands	213 946	219 214	206 761	-5.7
New Zealand	80 266	76 480	77 560 - 77 950	0.9 - 1.9
Norway	52 235	52 322	54 627	4.4
Poland (1990)	614 300	..	401 386 - 518 386	..
Poland[d] (1988)	572 257	629 830	401 386 - 518 386	(-36.3) - (-17.7)
Portugal	51 045	38 689	54 274	40.3
Romania (1990)	253 152	..	..	..
Romania[d] (1989)	276 859	..	..	..
Russian Federation	3 078 892	2 330 000	1 930 000 - 2 026 000	(-17.2) - (-13.0)
Slovakia	71 900	70 891	60 330	-14.9
Spain	310 070	222 908	276 523	24.1
Sweden	75 573	75 625	79 310	4.9
Switzerland	58 196	52 401	50 552	-3.5
UK	724 754	- 746 520	- 704 220	- -5.7
USA	5 842 371	5 944 684	5 975 064	0.5

[a] Figures from tables B.1, B.3, B.4 and B.5 have been used as the starting point for these projections. Only gases and sources that were projected are included. Some of the updates from IDRs, as explained in notes and footnotes to those tables, could not be included in these figures.

[b] Using 1994 GWPs, time-horizon = 100 years; figures differ from those in the communications where countries did not use those GWPs.

[c] Major differences between inventory figures and projection figures for 1990 indicate that projections were not given for all gases reported in the inventories or for all sectors, or that temperature (France, Netherlands, Switzerland) or electricity imports (Denmark) adjustments had been taken into account.

[d] Some EIT countries have asked for special consideration under Article 4.6 to use different base years from 1990; Bulgaria (1988), Hungary (average of 1985-1987), Poland (1988) and Romania (1989).

- The National Action Plan on Climate Change has aggregated projection figures of 577 Mt CO_2 equivalent for 1990 and 645-655 Mt CO_2 equivalent in 2000, giving 11.8 to 13.5 per cent growth.

Comments

When all emissions that were projected (apart from *land-use change and forestry*) are totalled for all countries using IPCC-1994 GWPs, sixteen countries, representing 42 per cent of the aggregated 1990 inventory figure, show stabilization or decreases. Eight of these were EITs. Fifteen Parties, representing 56 per cent of the aggregated inventories in 1990, show increases, three of these of less than 2 per cent. If unadjusted figures had been compared, another Party (Denmark) would have shown increases while the other three (France, Netherlands, Switzerland) that adjusted their starting points for projections would still show stabilization or decreases. A comparison with inventory data is not applicable for most Parties because either they did not make projections for all gases reported in the inventories or for all sources or they used different methods. The quantified updates from IDRs, as reflected in a separate column in table B.1 and in the notes to tables B.1 to B.5, would change some figures, but not the number of countries showing an increase, stabilization or decrease.

Table B.7. Projected anthropogenic emissions and removals of all greenhouse gases[a]

	Data from inventory	Data from projection		Variations from projection
	Base level (CO_2 equivalent in Gg)	Base level[c] (CO_2 equivalent in Gg)	2000 level (CO_2 equivalent in Gg)	(Percentage)
Australia	596 728	596 118	634 803	6.5
Austria[d]	60 567	- 75 944	- 81 844	- 7.8
Bulgaria (1990)	117 954	106 412	< 95 210	< -11.5
Bulgaria (1988)	133 690	125 205	< 95 210	< -24.0
Canada[d f]	577 954	547 324	604 085	10.9
Czech Republic	194 286	176 548	145 256	-17.7
Denmark	62 693	69 060	63 506	-8.0
Estonia[d]	48 275	37 800	17 500 - 23 000	(-53.7) - (-39.2)
Finland	36 514	36 734	44 158 - 61 158	20.2 - 66.5
France	461 684	478 857	459 643	-4.0
Germany	1 199 904	1 200 884	1 037 343	-13.4
Greece[d]	94 855	94 888	107 288	- 13.1
Hungary[d] (1990)	84 207	83 506	77 536	-7.1
Hungary[d] * (1985-87)	100 985	99 045	77 536	-21.7
Iceland	3 227	3 227	3 094	-4.1
Ireland	58 624	58 624	62 482	6.6
Italy	526 356	520 910	550 468	5.6
Japan	1 116 523	1 131 850	- 1 152 815	- 1.8
Latvia	13 340	13 340	11 257	-15.6
Liechtenstein[d]	264	208	245	18.1
Luxembourg	12 123	12 081	8 417	-30.3
Monaco[d]	71	..	..	..
Netherlands	212 446	217 714	204 961	-5.9
New Zealand	62 563	58 780	58 570 - 59 350	(-0.4) - (1.0)
Norway[d]	42 035	52 322	54 627	4.4
Poland[d] (1990)	614 300	..	401 386 - 518 386	..
Poland[d] * (1988)	570 849	629 830	401 386 - 518 386	(-36.3) - (-17.7)
Portugal[d]	51 045	38 689	54 274	40.3
Romania[d] (1990)	262 977	..	..	..
Romania[d] (1989)	273 934	..	..	..
Russian Federation[d]	2 344 892	2 330 000	1 930 000 - 2 026 000	(-17.2) - (-13.0)
Slovakia[d]	67 449	70 891	60 330	-14.9
Spain[d]	286 904	222 908	276 523	24.1
Sweden	41213	41 625	50 310	20.9
Switzerland	53 836	47 201	45 252	-4.1
UK	718 641	- 737 353	- 659 053	- -5.7
USA	5 842 371	5 467 974	5 436 015	-0.6

[a] Figures from tables B.1 to B.5 have been used as the starting point for these projections. Only gases and sources and removals that were projected are included.

[b] Using 1994 GWPs, time-horizon = 100 years; figures differ from those in the communications where countries did not use those GWPs.

[c] Major differences between inventory figures and projection figures for 1990 reflect the fact that projections were not given for all gases reported in the inventories or for all sectors, nor were temperature or electricity imports adjustments taken into account.

[d] Projection for *land-use change and forestry* not provided.

[a] Some EIT countries have asked for special consideration under Article 4.6 to use different base years from 1990; Bulgaria (1988), Hungary (average of 1985-1987), Poland (1988) and Romania (1989).

[f] The National Action Plan on Climate Change has aggregated projection figures of 577 Mt CO_2 equivalent for 1990 and 645-655 Mt CO_2 equivalent in 2000, giving 11.8 to 13.5 per cent growth.

Comments

Table B.7 aggregates available data for *land-use change and forestry* (from 18 countries) with other reported emission data presented in table B.6, recognizing the comments received on the appropriateness of presenting such "net" data. Eighteen Parties, representing 76 per cent of the aggregated inventory figure for 1990, projected stabilization or decrease. Eight of these were EITs. Thirteen Parties, representing 23 per cent of the aggregated 1990 inventories, projected increases. If unadjusted figures had been compared, another Party (Denmark) would have shown an increase while the other three (France, Netherlands, Switzerland) that adjusted their starting points for projections would still have shown stabilization or decreases. A comparison with inventory data is not applicable for most Parties because either they did not make projections for all gases reported in the inventories or for all sources or they used different methods. The quantified updates from IDRs, as reflected in a separate column in table B.1 and in the notes to tables B.1 to B.5, would change some figures but not the number of countries showing an increase, stabilization or decrease.

Table B.8 Projections for precursor gases

	Data from projections								
	1990 level[a]			2000 level[b]			Variations		
	CO	NO_x (Gg)	NMVOC	CO	NO_x (Gg)	NMVOC	CO	NO_x (Percentage)	NMVOC
Australia	26 074	1 874	2 236	..	..	..	..	..	..
Austria	1 683	225	415	..	..	..	..	..	..
Bulgaria	893	500	102	732	214	86	-18	-57	-16
Canada	10 225	2 090	2 104	..	..	..	..	..	..
Czech Republic	685	877	313	..	..	..	..	..	..
Denmark	771	293	165	647	203	140	-16	-31	-15
Estonia	294	~75	..	..	~29-38	..	..	(-39) - (-51)	..
Finland	487	295	219	339	228	140	-30	-23	-36
France	10 952	1 722	2 424	..	..	1 615	..	..	-32
Germany	10 300	3 150	1 700	< 10 300	< 3 150	< 1 700	< 0	< 0	< 0
Greece	1 480	338	236	..	372	..	..	10	..
Hungary	734	200	143	680	203	..	-7	2	..
Iceland	26	26	6	18	21	6	-31	-19	0
Ireland	429	115	197	322	105	171	-25	-9	-13
Italy	9 333	2 128	2 401	..	..	..	..	..	..
Japan	2 809	1 898	2 060	..	..	..	..	..	..
Latvia	363	90	63	278	53	39	-23	-41	-38
Liechtenstein	2	1	2	1	0	1	-52	-35	-41
Luxembourg	171	23	20	103	21	15	-40	-7	-25
Monaco	..	..	..	..	..	..	..	..	..
Netherlands	1 061	575	444	630	366	245	-40	-30	-40
New Zealand	..	145	..	..	..	..	..	..	..
Norway	941	231	251	622	218	244	-34	-6	-3
Poland	7 400	1 450	1 290	..	..	..	..	..	..
Portugal	1 083	214	206	..	..	..	..	..	..
Romania	3 179	520	1 084	..	..	..	..	..	..
Russian Federation	8 100	3 000	4 100	..	..	..	..	..	..
Slovakia	489	227	147	..	..	..	..	..	..
Spain	4 951	1 247	1119	..	892	668	..	-28	-40
Sweden	1 612	374	548	700	248	331	-56	-34	-40
Switzerland	430	184	297	273	100	243	-37	-46	-18
UK	6 700	2 800	2 700	3 400-3 700	1 800-2 200	1 700	(-45) - (-49)	(-21) -(-36)	-35
USA	82 674	21 362	19 123	..	..	..	..	..	..

[a] The starting point for projections could be different from the inventory figure reflected in table A.8 owing to different methodologies (emission factors), revision of inventories, rounding, calibration of models, or the fact that projections reflect only a subset of sectors.

[b] "With measures" levels for 2000.

Comments

Nineteen Parties provided projections for one or more of the precursors. Of these, three countries did not report on CO, one country did not convey projections for NO_x, and three countries did not forward information on NMVOC. Germany only gave quantified projections for 2005. All reporting countries, with two exceptions for NO_x emissions, expect often substantial reductions by 2000. Many of the Parties that reported precursors have made stabilization and/or reduction commitments on NO_x and NMVOCs under the UN-ECE Convention on Long-Range Transboundary Air Pollution.

Notes

Bulgaria: The emissions for the base year 1988 are as follows in Gg: CO 827; NO_x 486; and NMVOC 132.

Estonia: Projections were provided after the submission of the communication.

Finland: The nitrogen oxides category accounts for nitrogen dioxide (NO_2) only.

Germany: The 2005 figure for CO was 4,900 Gg, giving a reduction of 52 per cent compared to 1990; for NO_x it was 2,350 giving a 25 per cent reduction, while for NMVOC it was 570, giving a 66 per cent reduction in 2005.

Greece: In the communication it is indicated that emissions of CO will decrease by the year 2000, as will emissions of NMVOC.

Hungary: The Hungarian precursor emissions are evaluated "by simplified methods" (p. 89, bottom table). The information for the base period emissions is as follows in Gg (base period being defined as 1985-1987): CO 743.1; NO_x 231.4; NMVOC 205.0.

Norway: The 2000 figures are taken from the reference scenario in the White Paper on Climate Change and Nitrous Oxides, provided in the IDR.

Poland: The emissions for the base year 1988 are as follows in Gg: CO 2,730; NO_x 600; NMVOC > 352, based on IPCC methodology.

Romania: For the base year chosen by Romania, i.e. 1989, emissions were as follows (in Gg): CO 143, NMVOC 48, NO_X 24.

Sweden: The figures are taken from Appendix 1 to the national communication.

Switzerland: The Swiss figures are based on a study carried out in 1987. Differences in levels of activity in the various sectors in 1990 and the use of preliminary emission factors in the 1987 study suggest that the reported figures might differ significantly from actual 1990 emissions (IDR, paragraph 27).

Table C.1
C.1.1 Anthropogenic CO_2 emissions and removals, 1991 (Gigagrams and percentage of total by Party)

	Energy				Industrial processes		Waste		Other*		Total excl. land-use change and forestry	Land-use change and forestry		Total incl. land-use change and forestry
	Fuel combustion		Fugitive fuel											
	(Gg)	%	(Gg)	%	(Gg)	%	(Gg)	%	(Gg)	%	(Gg)	(Gg)	%	(Gg)
Austria	..		..		..		..		..		63 853			
Canada	409 176	90.1	15 311	3.4	22 081	4.9	658	0.1	7 000	1.5	454 226	..		..
Czech Republic	..		..		..		..		..		155 345	..		..
Denmark	61 691	98.1	..		1 203	1.9	..		..		62 894	-2 600	-4.1	60 294
Denmark [a]	59 970	98.0	..		1 203	2.0	..		..		61 173	-2 600	-4.3	58 573
Estonia	36 342	98.8	..		436	1.2	..		..		36 779	1761	4.8	38 539
Finland [b]	52 600	97.6	100	0.2	1 200	2.2	..		..		53 900	-31 000	-57.5	22 900
France	371 611	95.8	161	~0.0	15 961	4.1	.. [c]		..		387 733	-37 928	-9.8	349 805
Germany	950 625	97.5	..		24 623	2.5	..		..		975 248	-20 000	-2.1	955 248
Iceland	1 641	78.9	79	3.8	357	17.2	..		4	0.2	2 081	..		..
Japan	1 076 000	91.5	..		55 000	4.7	45 000 [d]	3.8	..		1 176 000	-90 000	-7.7	1 086 000
Netherlands	171 200	98.4	..		1 900	1.1	900	0.5	..		174 000	-1 500	-0.9	172 500
Netherlands [e]	171 600	98.4	..		1 900	1.1	900	0.5	..		174 400	-1 500	-0.9	172 900
New Zealand	22 795	87.7	700	2.7	2 510	9.7	..		..		26 005	-15 836	-60.9	10 169
Norway	26 235	77.6	1 168	3.5	6 024	17.8	80	0.2	310	0.9	33 817	..		..
Poland	..		..		..		..		..		396 900	..		..
Romania	..		..		..		..		..		141 313	..		..
Sweden	50 838	93.4	..		3 685	6.8	..		..		54 409	..		..
Switzerland	42 210	90.5	70	0.2	3 030	6.5	1 330 [f]	2.9	..		46 640	-4 380	-9.4	42 260
United Kingdom	570 852	98.0	5 146	0.9	6 192	1.1	513	0.1	..		588 432 [g]	-6 478	-1.1	581 954
United States	4 839 000	98.7	7 400	0.2	53 800	1.1	..		..		4 901 000	-458 000	-9.3	4 443 000
Total [h]	8 682 816	96.8	30 134	0.3	198 003	2.2	48 481	0.5	7 314	0.1	9 730 575	-665 961 [i]	-7.9	7 760 102

* Includes source/sink categories *solvent use* and *agriculture*.

[a] Emissions adjusted for electricity trade correction.

[b] 1990 estimates were used as the Party indicated they were representative of 1991.

[c] Estimate of 9,402 Gg provided for emission from *waste* but not included in national total.

[d] Party deviated from IPCC guidelines by including CO_2 emissions from organic waste combustion, aerobic decomposition, organic carbon in landfills, dumps, sludge or compost facilities in national total.

[e] Emissions adjusted for temperature correction.

[f] Party did not provide details as to whether CO_2 emissions from organic waste combustion, aerobic decomposition, organic carbon in landfills, dumps, sludge or compost were included in national total.

[g] The individual categories do not sum up to the total, as the Party presented an updated total figure.

[h] The percentages of the total accounted for by each category have been calculated on the basis of the overall total with the exclusion of Austria, the Czech Republic, Poland and Romania since data for the individual categories for these Parties were not included in the table. The adjusted estimates of Denmark and Netherlands were also not taken into account in calculating the percentages of total.

[i] Total and percentage based only on Parties reporting estimates for *land-use change and forestry*.

Table C.1 *(continued)*

C.1.2 Anthropogenic CO_2 emissions and removals, 1992 (Gigagrams and percentage of total by Party)

	Energy				Industrial processes		Waste		Other*		Total excl. land-use change and forestry	Land-use change and forestry		Total incl. land-use change and forestry
	Fuel combustion		Fugitive fuel											
	(Gg)	%	(Gg)	%	(Gg)	%	(Gg)	%	(Gg)	%	(Gg)	(Gg)	%	(Gg)
Austria	..		..		..		..		..		59 200			
Canada	421 340	90.0	18 086	3.9	21 916	4.7	687	0.1	6 000	1.3	468 029	..		..
Czech Republic	..		..		..		..		..		142 179	..		..
Denmark	55 797	97.7	..		1 321	2.3	..		..		57 118	-2 600	-4.6	54 518
Denmark [a]	59 070	97.8	..		1 321	2.2	..		..		60 391	-2 600	-4.6	57 791
Estonia	27 453	98.9	..		313	1.1	..		..		27 766	1 724	6.2	29 490
Finland	51 000	98.5	..		800	1.5	..		..		51 800	..		..
France	360 321	96.0	201	0.1	14 892	4.0	.. [c]		..		375 414	-37 176	-9.9	338 238
Germany	901 383	97.3	..		25 179	2.7	..		..		926 562	-20 000	-2.2	906 562
Iceland	1 754	79.8	79	3.6	361	16.4	..		4	0.2	2 198	..		..
Japan	1 088 000	91.3	..		56 000	4.7	48 000 [d]	4.0	..		1 192 000	-90 000 [b]	-7.6	1 102 000
Netherlands	169 300	98.4	..		1 900	1.1	900	0.5	..		172 100	-1 500	-0.9	170 600
Netherlands [e]	173 800	98.4	..		1 900	1.1	900	0.5	..		176 600	-1 500	-0.9	175 100
New Zealand	24 641	88.1	667	2.4	2 653	9.5	..		..		27 961	-15 109	-54.0	12 852
Norway	26 863	78.4	1 119	3.3	5 870	17.1	80	0.2	312	0.9	34 244	..		..
Poland	360 927	97.1	61	~0.0	10 603	2.9	..		..		371 591	..		..
Romania	..		..		..		..		..		123 859	..		..
Sweden	51 545	91.3	..		4 898	8.7	..		..		56 443	..		..
Switzerland	41 280	90.9	70	0.2	2 740	6.0	1 340 [f]	2.9	..		45 430	-4 430	-9.8	41 000
United Kingdom	555 933	98.0	5 342	0.9	5 543	1.0	513	0.1	..		571 783 [g]	-6 185	-1.1	565 598
United States	4 914 000	98.8	7 300	0.1	54 100	1.1	..		..		4 976 000	-458 000	-9.2	4 518 000
Total [h]	9 051 536	96.8	32 925	0.4	209 088	2.2	51 520	0.6	6 316	0.1	9 681 677	-633 276 [i]	-7.5	7 738 858

* Includes source/sink categories *solvent use* and *agriculture*.

[a] Emissions adjusted for electricity trade correction.

[b] Party only provided an estimate for *land-use change and forestry* for 1991. For completeness the secretariat chose to use this estimate for subsequent years (1992-1994).

[c] Estimate of 9,649 Gg provided for emission from *waste* but not included in national total.

[d] Party deviated from IPCC guidelines by including CO_2 emissions from organic waste combustion, aerobic decomposition, organic carbon in landfills, dumps, sludge or compost facilities in national total.

[e] Emissions adjusted for temperature correction.

[f] Party did not provide details as to whether CO_2 emissions from organic waste combustion, aerobic decomposition, organic carbon in landfills, dumps, sludge or compost were included in national total.

[g] The individual categories do not sum up to the total, as the Party presented an updated total figure.

[h] The percentages of the total accounted for by each category have been calculated on the basis of the overall total with the exclusion of Austria, the Czech Republic and Romania since data for the individual categories for these Parties were not included in the table. The adjusted estimates of Denmark and Netherlands were also not taken into account in calculating the percentages of total.

[i] Total and percentage based only on Parties reporting estimates for *land-use change and forestry*.

Table C.1 *(continued)*
C.1.3 Anthropogenic CO_2 emissions and removals, 1993 (Gigagrams and percentage of total by Party)

	Energy				Industrial processes		Waste		Other*		Total excl. land-use change and forestry	Land-use change and forestry		Total incl. land-use change and forestry
	Fuel combustion		Fugitive fuel											
	(Gg)	%	(Gg)	%	(Gg)	%	(Gg)	%	(Gg)	%	(Gg)	(Gg)	%	(Gg)
Canada	420 968	89.3	19 320	4.1	24 217	5.1	696	0.1	6 000	1.3	471 202	..		..
Czech Republic	..		..		..		..		..		138 547	..		..
Denmark	57 730	97.7	..		1 337	2.3	..		..		59 067	-2 600	-4.4	56 467
Denmark [a]	58 718	97.8	..		1 337	2.2	..		..		60 055	-2 600	-4.3	57 455
Estonia	20 656	99.1	..		193	0.9	..		..		20 849	1 684	8.1	22 533
Finland	51 700	98.5	..		800	1.5	..		..		52 500	..		..
France	351 087	96.0	208	0.1	14 250	3.9	.. [c]		..		365 545	-37 189	-10.2	328 356
Germany	886 000	97.2	..		25 200	2.8	..		..		911 200	-20 000	-2.2	891 200
Iceland	1 809	78.6	79	3.4	408	17.7	..		5	0.2	2 301	..		..
Japan	1 068 000	91.2	..		55 000	4.7	48 000 [d]	4.1	..		1 171 000	-90 000 [b]	-7.7	1 081 000
Netherlands	170 700	98.4	..		1 900	1.1	900	0.5	..		173 500	-1 700	-1.0	171 800
Netherlands [e]	171 650	98.4	..		1 900	1.1	900	0.5	..		174 450	-1 700	-1.0	172 750
New Zealand	23 877	87.5	631	2.3	2 778	10.2	..		..		27 286	-14 826	-54.3	12 460
Norway	27 971	78.3	1 235	3.5	6 138	17.2	80	0.2	309	0.9	35 733	..		..
Romania	..		..		..		..		..		120 580	..		..
Sweden	51 427	92.8	..		3 993	7.2	..		..		55 420	..		..
Switzerland	40 020	91.0	71	0.2	2 550	5.8	1 340 [f]	3.0	..		43 980	-5 160	-11.7	38 820
United Kingdom	541 797	98.0	5 003	0.9	5 281	1.0	513	0.1	..		557 613 [g]	-6 163	-1.1	551 450
United States	5 020 000	98.7	8 300	0.2	55 800	1.1	..		..		5 084 000	-532 000	-10.5	4 552 000
Total [h]	8 733 741	96.8	34 847	0.4	199 845	2.2	51 529	0.6	6 314	0.1	9 290 323	-707 954 [i]	-8.4	7 706 086

*Includes source/sink categories *solvent use* and *agriculture*.

[a] Emissions adjusted for electricity trade correction.

[b] Party only provided an estimate for *land-use change and forestry* for 1991. For completeness the secretariat chose to use this estimate for subsequent years (1992-1994).

[c] Estimate of 9,753 Gg provided for emission from *waste* but not included in national total.

[d] Party deviated from IPCC guidelines by including CO_2 emissions from organic waste combustion, aerobic decomposition, organic carbon in landfills, dumps, sludge or compost facilities in national total.

[e] Emissions adjusted for temperature correction.

[f] Party did not provide details as to whether CO_2 emissions from organic waste combustion, aerobic decomposition, organic carbon in landfills, dumps, sludge or compost were included in national total.

[g] The individual categories do not sum up to the total, as the Party presented an updated total figure.

[h] The percentages of the total accounted for by each category have been calculated on the basis of the overall total with the exclusion of the Czech Republic and Romania since data for the individual categories for these Parties were not included in the table. The adjusted estimates of Denmark and Netherlands were also not taken into account in calculating the percentages of total.

[i] Total and percentage based only on Parties reporting estimates for *land-use change and forestry*.

Table C.1 *(continued)*

C.1.4 Anthropogenic CO_2 emissions and removals, 1994 (Gigagrams and percentage of total by Party)

	Energy				Industrial processes		Waste		Other*		Total excl. land-use change and forestry	Land-use change and forestry		Total incl. land-use change and forestry
	Fuel combustion		Fugitive fuel											
	(Gg)	%	(Gg)	%	(Gg)	%	(Gg)	%	(Gg)	%	(Gg)	(Gg)	%	(Gg)
Canada	431 494	89.2	20 341	4.2	25 019	5.2	704	0.1	6 000	1.3	483 557	..		..
Denmark	61 805	97.9	..		1 327	2.1	..		..		63 132	-2 600	-4.1	60 532
Denmark [a]	57 779	97.8	..		1 327	2.2	..		..		59 106	-2 600	-4.4	56 506
Estonia	21 413	99.0	..		215	1.0	..		..		21 628	1 645	7.6	23 273
Finland	57 500	98.6	..		800	1.4	..		..		58 300	..		..
Japan	1 137 000	91.6	..		56 000	4.5	48 000 [c]	3.9	..		1 241 000	-90 000 [b]	-7.3	1 151 000
Netherlands	173 600	98.4	..		1 900	1.1	900	0.5	..		176 400	-1 700	-1.0	174 700
Netherlands [d]	175 200	98.4	..		1 900	1.1	900	0.5	..		178 000	-1 700	-1.0	176 300
New Zealand	24 069	87.8	680	2.5	2 680	9.8	..		..		27 429	-13 796	-50.3	13 633
Norway	29 331	77.9	1 351	3.6	6 597	17.5	81	0.2	309	0.8	37 669	..		..
Sweden	53 081	91.1	..		4 883	8.4	..		294	0.5	58 258	..		..
Switzerland	39 190	90.4	72	0.2	2 730	6.3	1 340 [e]	3.1	..		43 330	-5 150	-11.9	38 180
United Kingdom	534 123	96.8	8 566	1.6	8 373	1.5	513	0.1	..		554 141	-5 970	-1.1	548 172
United States	5 098 000	99.5	5 000	0.1	23 083	0.5	..		..		5 126 084	-532 000	-10.4	4 594 084
Total [f]	7 660 606	97.1	36 010	0.5	133 607	1.7	51 538	0.7	6 603	0.1	7 890 928	-649 571 [g]	-9.0	6 603 574

* Includes source/sink categories *solvent use* and *agriculture*.

[a] Emissions adjusted for electricity trade correction.

[b] Party only provided an estimate for *land-use change and forestry* for 1991. For completeness the secretariat chose to use this estimate for subsequent years (1992-1994).

[c] Party deviated from IPCC guidelines by including CO_2 emissions from organic waste combustion, aerobic decomposition, organic carbon in landfills, dumps, sludge or compost facilities in national total.

[d] Emissions adjusted for temperature correction.

[e] Party did not provide details as to whether CO_2 emissions from organic waste combustion, aerobic decomposition, organic carbon in landfills, dumps, sludge or compost were included in national total.

[f] The adjusted estimates of Denmark and Netherlands were not taken into account in calculating the percentages of total.

[g] Total and percentage based only on Parties reporting estimates for *land-use change and forestry*.

Table C.2
C.2.1 Anthropogenic emissions of CH_4, 1991 (Gigagrams and percentage of total by Party)

	Energy				Agriculture				Waste		Other ***		Total
	Fuel combustion		Fugitive fuel		Livestock*		Other**						
	(Gg)	(%)	(Gg)	(%)	(Gg)	(%)	(Gg)	(%)	(Gg)	(%)	(Gg)	(%)	(Gg)
Canada	42	1.3	1 390	44.0	898	28.4	..		782	24.7	48	1.5	3 161
Denmark	13	3.1	12	2.9	262	64.2	..		122	29.8	..		409
Estonia	3	0.9	184	63.8	60	20.8	..		42	14.5	~0	0.1	289
Finland [a]	19	7.5	.. [b]		94	37.3	..		139	55.2	..		252
France	185	6.5	310	10.8	1 585	55.4	37	1.3	739	25.9	3	0.1	2 859
Germany	157	3.0	1 464	27.9	1 806	34.4	..		1 814	34.6	10	0.2	5 250
Iceland	~0	0.9	..		12	50.4	..		11	48.7	..		23
Japan	25	1.8	100	7.3	520	38.0	264	19.3	459	33.6	..		1 368
Netherlands	28	2.6	169	15.5	512	47.0	..		378	34.7	..		1 089
New Zealand	8	0.4	22	1.1	1 477	75.9	..		433	22.3	6	0.3	1 946
Norway	16	5.5	15	5.2	93	32.1	..		165	56.9	1	0.3	289
Romania	..		..		..		..		..		..		1 725
Switzerland	9	2.7	14	4.4	212	64.4	25	7.6	68	20.8	~0	0.1	328
United Kingdom	78	1.7	1 240	27.6	1 114	24.8	11	0.2	2 053	45.7	..		4 398 [c]
United States	900	3.3	7 600	27.9	7 980	29.2	500	1.8	10 300	37.7	..		27 300
Total [d]	1 482	3.0	12 520	25.5	16 624	33.9	837	1.7	17 505	35.7	68	0.1	50 686

* Includes enteric fermentation and animal wastes.

** Includes rice cultivation, agricultural soils, agricultural waste burning and savannah burning.

*** Includes *solvent use*, *industrial processes* and *land-use change and forestry*.

[a] 1990 estimates were used as the Party indicated they were representative of 1991.

[b] Methane emissions from refineries were included in NMVOC emissions estimates.

[c] The individual categories do not sum up to the total, as the Party presented an updated total figure.

[d] The percentages of the total accounted for by each category have been calculated on the basis of the overall total with the exclusion of Romania since data for the individual categories were not included in the table.

Table C.2 *(continued)*
C.2.2 Anthropogenic emissions of CH_4, 1992 (Gigagrams and percentage of total by Party)

	Energy				Agriculture				Waste		Other ***		Total
	Fuel combustion		Fugitive fuel		Livestock*		Other**						
	(Gg)	(%)	(Gg)	(%)	(Gg)	(%)	(Gg)	(%)	(Gg)	(%)	(Gg)	(%)	(Gg)
Canada	41	1.3	1 508	46.2	888	27.2	..		791	24.2	37	1.1	3 265
Denmark	13	3.2	12	2.9	261	64.1	..		122	29.9	..		407
Estonia	2	0.8	139	61.2	55	24.1	..		31	13.7	~0	0.1	227
Finland	16	6.5	.. [a]		93	38.0	..		132	53.9	4	1.6	245
France	183	6.5	320	11.4	1 550	54.9	38	1.3	726	25.7	3	0.1	2 821
Germany	136	2.6	1 450	27.9	1 718	33.1	..		1 881	36.2	8	0.2	5 194
Iceland	~0	0.9	..		11	54.0	..		10	45.0	..		21
Japan	26	2.0	99	7.5	520	39.2	272	20.5	409	30.8	..		1 326
Netherlands	28	2.6	165	15.4	498	46.6	..		378	35.4	..		1 069
New Zealand	8	0.4	22	1.2	1 436	75.7	..		428	22.5	4	0.2	1 898
Norway	15	5.1	16	5.5	95	32.4	..		166	56.7	1	0.3	293
Poland	29	1.2	793	32.0	702	28.4	1	~0.0	941	38.0	8	0.3	2 474
Romania	..		..		..		..		..		..		1 506
Sweden	18	8.5	.. [a]		197	91.4	..		..		..		216
Switzerland	9	2.8	14	4.4	207	64.2	25	7.7	68	21.0	~0	0.1	323
United Kingdom	72	1.6	1 159	26.6	1 111	25.5	8	0.2	2 005	46.1	..		4 284 [b]
United States	900	3.3	7 400	27.2	8 200	30.1	600	2.2	10 100	37.1	..		27 200
Total [c]	1 496	2.9	13 097	25.5	17 543	34.2	944	1.8	18 187	35.4	65	0.1	52 769

* Includes enteric fermentation and animal wastes.

** Includes rice cultivation, agricultural soils, agricultural waste burning and savannah burning.

*** Includes *solvent use*, *industrial processes* and *land-use change and forestry*.

[a] Methane emissions from refineries were included in NMVOC emissions estimates.

[b] The individual categories do not sum up to the total, as the Party presented an updated total figure.

[c] The percentages of the total accounted for by each category have been calculated on the basis of the overall total with the exclusion of Romania since data for the individual categories were not included in the table.

Table C.2 *(continued)*
C.2.3 Anthropogenic emissions of CH_4, 1993 (Gigagrams and percentage of total by Party)

	Energy				Agriculture				Waste		Other ***		Total
	Fuel combustion		Fugitive fuel		Livestock*		Other**						
	(Gg)	(%)	(Gg)	(%)	(Gg)	(%)	(Gg)	(%)	(Gg)	(%)	(Gg)	(%)	(Gg)
Canada	40	1.2	1 597	46.9	928	27.2	..		808	23.7	34	1.0	3 408
Denmark	12	3.0	11	2.8	261	64.3	..		122	29.9	..		407
Estonia	2	0.9	105	57.7	47	25.8	..		28	15.5	~0	0.1	182
Finland	13	5.3	.. [a]		92	37.9	..		134	55.1	4	1.6	243
France	182	6.4	333	11.8	1 550	54.8	38	1.3	725	25.6	3	0.1	2 831
Germany	130	2.5	1 460	28.1	1 688	32.4	..		1 917	36.8	8	0.2	5 203
Iceland	~0	0.9	..		11	53.1	..		10	46.0	..		21
Japan	26	2.0	94	7.1	520	39.5	276	21.0	400	30.4	..		1 316
Netherlands	27	2.5	171	16.0	493	46.2	..		377	35.3	..		1 067
New Zealand	8	0.4	22	1.2	1 409	75.5	..		423	22.7	3	0.2	1 866
Norway	18	6.1	15	5.1	94	32.1	..		165	56.3	1	0.3	293
Romania	..		..		..		..		..		..		1 502
Switzerland	8	2.5	14	4.3	203	64.0	25	7.9	67	21.1	1	0.3	318
United Kingdom	75	1.8	1 003	24.0	1 110	26.6	..		1 990	47.6	..		4 104 [b]
United States	800	3.0	6 900	25.8	8 300	31.1	500	1.9	10 200	38.2	..		26 700
Total [c]	1 341	2.8	11 725	24.4	16 707	34.8	839	1.7	17 366	36.2	54	0.1	49 461

* Includes enteric fermentation and animal wastes.
** Includes rice cultivation, agricultural soils, agricultural waste burning and savannah burning.
*** Includes *solvent use*, *industrial processes* and *land-use change and forestry*.
[a] Methane emissions from refineries were included in NMVOC emissions estimates.
[b] The individual categories do not sum up to the total, as the Party presented an updated total figure.
[c] The percentages of the total accounted for by each category have been calculated on the basis of the overall total with the exclusion of Romania since data for the individual categories were not included in the table.

Table C.2 *(continued)*
C.2.4 Anthropogenic emissions of CH_4, 1994 (Gigagrams and percentage of total by Party)

	Energy				Agriculture				Waste		Other ***		Total
	Fuel combustion		Fugitive fuel		Livestock*		Other**						
	(Gg)	(%)	(Gg)	(%)	(Gg)	(%)	(Gg)	(%)	(Gg)	(%)	(Gg)	(%)	(Gg)
Canada	40	1.1	1 695	47.8	964	27.2	..		815	23.0	31	0.9	3 545
Denmark	12	3.0	11	2.8	256	63.8	..		122	30.4	..		401
Estonia	2	1.0	109	58.1	46	24.7	..		30	16.1	~0	0.1	188
Finland	16	6.5	.. [a]		92	37.2	..		135	54.7	4	1.6	247
Netherlands	28	2.7	159	15.3	478	45.9	..		376	36.1	..		1 041
New Zealand	8	0.4	23	1.2	1 436	76.1	..		416	22.0	5	0.3	1 888
Norway	18	6.1	16	5.4	95	32.0	..		167	56.2	1	0.3	297
Sweden	34	14.4	.. [a]		202	85.6	..		..		..		237
Switzerland	8	2.5	13	4.1	205	64.3	25	7.8	67	21.1	1	0.3	318
United Kingdom	91	2.3	808	20.8	1 116	28.8	..		1 862	48.0	..		3 876 [b]
United States	945	3.4	7 630	27.1	8 558	30.4	638	2.3	10 400	36.9	..		28 171
Total	1 202	3.0	10 464	26.0	13 448	33.4	663	1.6	14 390	35.8	41	0.1	40 209

* Includes enteric fermentation and animal wastes.
** Includes rice cultivation, agricultural soils, agricultural waste burning and savannah burning.
*** Includes *solvent use*, *industrial processes* and *land-use change and forestry*.

[a] Methane emissions from refineries were included in NMVOC emissions estimates.
[b] The individual categories do not sum up to the total, as the Party presented an updated total figure.

Table C.3
C.3.1 Anthropogenic emissions of N_2O, 1991 (Gigagrams and percentage of total by Party)

	Energy				Industrial processes		Agriculture*		Waste		Other**		Total
	Transport		Other										
	(Gg)	(%)	(Gg)	(%)	(Gg)	(%)	(Gg)	(%)	(Gg)	(%)	(Gg)	(%)	(Gg)
Canada	35.2	37.2	10.8	11.4	34.7	36.7	10.5	11.1	0.1	0.1	3.2	3.4	94.5
Denmark	0.5	4.7	1.7	15.9	..		8.5	79.4	..		..		10.7
Estonia	..		1.4	60.9	..		0.9	39.1	..		..		2.3
Finland	5.0	22.7	2.0	9.1	3.0	13.6	12.0	54.5	..		..		22.0
France	4.3	2.4	9.5	5.3	101.7	57.0	61.6	34.5	1.2	0.7	..		178.3
Germany	8.0	4.2	25.0	13.0	84.0	43.8	69.0	35.9	..		6.0	3.1	192.0
Iceland	~0.0	5.3	~0.0	7.0	..		0.5	87.7	..		..		0.6
Japan	13.7	25.7	8.9	16.7	20.5	38.4	4.4	8.2	5.9	11.0	..		53.4
Netherlands	5.4	9.0	0.6	1.0	16.4	27.3	22.3	37.2	15.3 [a]	25.5	..		60.2
New Zealand	0.4	2.2	2.1	12.2	..		13.9	81.8	0.6	3.5	~0.0	0.2	17.0
Norway	1.0	7.1	1.0	7.1	6.0	42.9	6.0	42.9	..		..		15.0
Romania	..		..		..		..		..		..		90.4
Switzerland	1.3	7.9	0.3	1.7	0.3	2.0	13.4	84.7	0.2	1.5	0.4	2.2	15.8
United Kingdom	1.9	1.8	2.9	2.8	88.0	85.2	10.4	10.1	..		..		107.4 [b]
United States	100.0	25.0	0.0	0.0	100.0	25.0	200.0	50.0	..		..		400.0
Total [c]	176.6	15.2	66.2	5.7	454.6	39.1	433.4	37.2	23.3	2.0	9.6	0.8	1 259.6

* Includes rice cultivation, agricultural waste burning and savannah burning.

** Includes *solvent use* and *land-use change and forestry*.

[a] Includes emissions from polluted surface waters which was reported as an additional source/sink category.

[b] The individual categories do not sum up to the total, as the Party presented an updated total figure.

[c] The percentages of the total accounted for by each category have been calculated on the basis of the overall total with the exclusion of Romania since data for the individual categories were not included in the table.

Table C.3 *(continued)*
C.3.2 Anthropogenic emissions of N_2O, 1992 (Gigagrams and percentage of total by Party)

	Energy				Industrial processes		Agriculture*		Waste		Other**		Total
	Transport		Other										
	(Gg)	(%)	(Gg)	(%)	(Gg)	(%)	(Gg)	(%)	(Gg)	(%)	(Gg)	(%)	(Gg)
Canada	37.9	38.5	11.0	11.3	34.6	35.1	12.0	12.2	0.1	0.1	32.9	3.0	98.6
Denmark	0.6	5.7	1.5	14.2	..		8.5	80.2	..		..		10.6
Estonia	..		1.0	58.8	..		0.7	41.2	..		..		1.8
Finland	1.0	10.0	3.0	30.0	2.0	20.0	4.0	40.0	..		..		10.00
France	4.5	2.6	9.3	5.3	97.7	56.0	61.7	35.4	1.2	0.7	..		174.4
Germany	8.0	4.0	25.0	12.6	93.0	47.0	67.0	33.8	..		6.0	3.0	198.0
Iceland	~0.0	5.3	~0.0	7.0	..		0.5	87.7	..		..		0.6
Japan	13.7	25.7	9.0	16.9	20.2	37.8	4.5	8.4	6.0	11.2	..		53.4
Netherlands	5.6	9.4	0.6	1.0	16.4	27.4	21.9	36.6	15.3 [a]	25.6	..		59.9
New Zealand	0.4	2.2	2.2	12.6	..		14.4	81.6	0.6	3.4	~0.0	0.1	17.6
Norway	1.0	8.0	1.0	8.0	4.0	32.1	6.5	51.8	..		..		13.0
Poland	1.4	2.8	4.5	8.9	12.9	25.7	31.5	62.7	..		..		50.2
Romania	..		..		..		..		..		..		68.4
Sweden	1.1	5.7	..		2.3	11.5	16.6	82.7	~0	0.2	..		20.1
Switzerland	1.4	8.7	0.2	1.6	0.3	2.0	13.3	83.8	0.2	1.5	0.4	2.3	15.8
United Kingdom	2.1	2.4	2.8	3.3	70.0	82.4	10.0	11.8	..		..		90.8 [b]
United States	100.0	25.0	..		100.0	25.0	200.0	50.0	..		..		400.0
Total [c]	178.7	14.8	71.3	5.9	453.4	37.5	473.0	39.2	23.5	1.9	9.3	0.8	1 283.2

* Includes rice cultivation, agricultural waste burning and savannah burning.

** Includes *solvent use* and *land-use change and forestry*.

[a] Includes emissions from polluted surface waters which was reported as an additional source/sink category.

[b] The individual categories do not sum up to the total, as the Party presented an updated total figure.

[c] The percentages of the total accounted for by each category have been calculated on the basis of the overall total with the exclusion of Romania since data for the individual categories were not included in the table.

Table C.3 *(continued)*
C.3.3 Anthropogenic emissions of N_2O, 1993 (Gigagrams and percentage of total by Party)

	Energy				Industrial processes		Agriculture*		Waste		Other**		Total
	Transport		Other										
	(Gg)	(%)	(Gg)	(%)	(Gg)	(%)	(Gg)	(%)	(Gg)	(%)	(Gg)	(%)	(Gg)
Canada	42.2	42.0	10.6	10.6	31.8	31.7	12.9	12.8	0.1	0.1	2.8	2.8	100.4
Denmark	0.8	7.4	1.6	14.8	..		8.5	78.7	..		..		10.8
Estonia	..		0.9	64.3	..		0.5	35.7	..		..		1.4
Finland	1.0	9.1	3.0	27.3	3.0	27.3	4.0	36.4	..		..		11.0
France	5.4	3.2	9.1	5.3	93.2	54.6	61.7	36.2	1.2	0.7	..		170.6
Germany	9.0	4.7	24.0	12.5	86.0	44.8	67.0	34.9	..		6.0	3.1	191.0
Iceland	~0.0	5.3	~0.0	7.0	..		0.5	87.7	..		..		0.6
Japan	14.3	26.4	9.4	17.3	19.8	36.5	4.6	8.5	6.1	11.3	..		54.2
Netherlands	6.6	11.4	1.1	1.9	18.7	32.5	26.6	46.3	4.5 [a]	7.8	0.5	0.9	58.0
New Zealand	0.4	2.1	2.1	11.0	..		15.7	83.5	0.6	3.2	~0.0	0.1	18.7
Norway	1.0	7.7	1.0	7.7	5.0	38.5	6.0	46.2	..		..		14.0
Romania	..		..		..		..		..		..		97.8
Switzerland	1.5	9.8	0.3	1.8	0.3	2.0	12.9	82.7	0.3	1.6	0.4	2.4	15.6
United Kingdom	2.8	3.6	2.5	3.2	63.0	80.8	9.7	12.4	..		..		81.4 [b]
United States	100.0	25.0	..		100.0	25.0	200.0	50.0	..		..		400.0
Total [c]	185.1	16.5	65.6	5.8	420.8	37.4	430.5	38.3	12.8	1.1	9.7	0.9	1 225.5

* Includes rice cultivation, agricultural waste burning and savannah burning.
** Includes *solvent use* and *land-use change and forestry*.
[a] Includes emissions from polluted surface waters which was reported as an additional source/sink category.
[b] The individual categories do not sum up to the total, as the Party presented an updated total figure.
[c] The percentages of the total accounted for by each category have been calculated on the basis of the overall total with the exclusion of Romania since data for the individual categories were not included in the table.

Table C.3 *(continued)*
C.3.4 Anthropogenic emissions of N_2O, 1994 (Gigagrams and percentage of total by Party)

	Energy				Industrial processes		Agriculture*		Waste		Other**		Total
	Transport		Other										
	(Gg)	(%)	(Gg)	(%)	(Gg)	(%)	(Gg)	(%)	(Gg)	(%)	(Gg)	(%)	(Gg)
Canada	46.3	41.6	10.8	9.8	37.9	34.1	13.3	11.9	0.2	0.2	2.8	2.5	111.2
Denmark	0.8	7.4	1.6	14.8	..		8.5	78.7	..		..		10.9
Estonia	..		0.8	61.5	..		0.5	38.5	..		..		1.3
Finland	1.0	9.1	3.0	27.3	3.0	27.3	4.0	36.4	..		..		11.0
Netherlands	7.1	12.2	1.1	1.9	18.7	32.2	26.2	45.1	4.5 [a)]	7.7	0.5	0.9	58.1
New Zealand	0.4	2.2	2.0	10.3	..		16.2	84.3	0.6	3.1	~0.0	0.2	19.2
Norway	1.0	7.1	2.0	14.3	5.0	35.7	6.0	42.9	..		..		14.0
Sweden	1.3	5.3	4.1	16.8	2.4	9.6	16.7	68.1	..		..		24.5
Switzerland	1.6	10.1	0.3	1.6	0.3	1.9	13.4	82.5	0.3	1.7	0.4	2.5	16.3
United Kingdom	6.8	7.3	3.3	3.5	73.6	78.6	9.9	10.6	..		..		93.7 [b)]
United States	106.0	29.5	37.0	10.3	..		216.0	60.2	..		5.0	1.1	359.0
Total	172.5	24.0	66.0	9.2	140.9	19.6	330.6	46.0	5.6	0.8	3.7	0.5	719.2

* Includes rice cultivation, agricultural waste burning and savannah burning.

** Includes *solvent use* and *land-use change and forestry*.

[a] Includes emissions from polluted surface waters which was reported as an additional source/sink category.

[b] The individual categories do not sum up to the total, as the Party presented an updated total figure.

Table C.4
C.4.1 Anthropogenic emissions of other greenhouse gases, 1991 (Gigagrams)

	HFCs					PFCs		SF_6	CO_2 equivalent of other greenhouse gases (IPCC 1994 GWPs, 100 year time horizon)
	HFC 134a	HFC 125	HFC 23a	HFC 152a	HFC 227	CF_4	C_2F_6		
	(Gg)	(Gg)	(Gg)	(Gg)	(Gg)	(Gg)	(Gg)	(Gg)	(Gg)
Canada	..	..	..	..	..	0.865	0.144	0.136	10 636
Denmark	0.003	..	..	..	..	..	..	0.009	228
Iceland [a]	..	..	..	..	..	0.035	0.002	..	245
Netherlands	..	..	..	..	..	0.500	0.050	..	3 775
New Zealand [a]	..	..	..	..	..	0.095	0.005	..	661
Norway	0.001	..	..	0.003	..	0.313	0.014	0.086	4 290
United States	..	..	4.280	0.180	..	2.490	0.250	0.960	94 529
Total	0.004	..	4.280	0.183	..	4.298	0.465	1.191	114 364

[a] Party reported only aggregate PFC estimates; the secretariat assumed that approximately 5 per cent of these emissions are C_2F_6 and the remaining 95 per cent CF_4.

Table C.4 *(continued)*
C.4.2 Anthropogenic emissions of other greenhouse gases, 1992 (Gigagrams)

	HFCs					PFCs		SF_6	CO_2 equivalent of other greenhouse gases (IPCC 1994 GWPs, 100 year time horizon)
	HFC 134a	HFC 125	HFC 23a	HFC 152a	HFC 227	CF_4	C_2F_6		
	(Gg)	(Gg)	(Gg)	(Gg)	(Gg)	(Gg)	(Gg)	(Gg)	(Gg)
Canada	..	..	..	..	..	0.905	0.078	0.091	8 942
Denmark	0.020	..	..	0.004	..	..	..	..	27
Iceland [a]	..	..	..	..	..	0.015	0.001	..	106
Netherlands	..	..	..	..	..	0.500	0.050	..	3 775
New Zealand [a]	..	..	..	..	..	0.095	0.005	..	661
Norway	0.002	..	..	0.003	..	0.242	0.011	0.029	2 387
United States	3.470	..	4.490	1.030	..	2.450	0.240	0.980	101 821
Total	3.492	..	4.490	1.037	..	4.207	0.385	1.100	117 719

[a] Party reported only aggregate PFC estimates; the secretariat assumed that approximately 5 per cent of these emissions are C_2F_6 and the remaining 95 per cent CF_4.

Table C.4 *(continued)*
C.4.3 Anthropogenic emissions of other greenhouse gases, 1993 (Gigagrams)

	HFCs					PFCs		SF_6	CO_2 equivalent of other greenhouse gases (IPCC 1994 GWPs, 100 year time horizon)
	HFC 134a	HFC 125	HFC 23a	HFC 152a	HFC 227	CF_4	C_2F_6		
	(Gg)	(Gg)	(Gg)	(Gg)	(Gg)	(Gg)	(Gg)	(Gg)	(Gg)
Canada	..	..	..	..	..	1.017	0.086	0.084	9 574
Denmark	0.311	..	..	0.032	..	..	..	..	409
Germany	..	..	..	..	..	1.000	0.150	0.250	14 400
Iceland [a) b)]	0.001	..	..	..	..	0.008	..	..	54
Japan	0.700	..	1.200	..	..	0.300	0.100	0.200	23 550
Netherlands [a)]	0.100	..	..	..	..	0.500	0.050	..	3 905
New Zealand [b)]	..	..	..	..	..	0.095	0.005	..	661
Norway	0.031	..	..	0.001	..	0.254	0.011	0.030	2 525
United States	5.920	..	3.960	1.040	..	2.240	0.220	1.000	97 520
Total	7.063	..	5.160	1.073	..	5.414	0.622	1.564	152 598

[a)] Party reported only aggregate HFC estimates; the secretariat assumed that these emissions were HFC 134a.

[b)] Party reported only aggregate PFC estimates; the secretariat assumed that approximately 5 per cent of these emissions are C_2F_6 and the remaining 95 per cent CF_4.

Table C.4 *(continued)*
C.4.4 Anthropogenic emissions of other greenhouse gases, 1994 (Gigagrams)

	HFCs					PFCs		SF_6	CO_2 equivalent of other greenhouse gases (IPCC 1994 GWPs, 100 year time horizon)
	HFC 134a	HFC 125	HFC 23a	HFC 152a	HFC 227	CF_4	C_2F_6		
	(Gg)	(Gg)	(Gg)	(Gg)	(Gg)	(Gg)	(Gg)	(Gg)	(Gg)
Canada	..	..	..	..	..	0.945	0.083	0.085	9 108
Denmark	0.520	..	0.030	0.050	..	..	..	0.012	1 345
Finland [a]	0.061	..	..	..	..	..	..	0.004	179
Netherlands [a]	0.100	..	..	..	..	0.500	0.050	..	3 905
New Zealand [a] [b]	0.060	..	..	0.001	..	0.095	0.005	..	739
Norway	0.040	0.011	..	0.001	..	0.231	0.011	0.035	2 553
United States	10.410	1.130	4.180	1.530	0.089	2.000	0.200	1.030	108 982
Total	11.191	1.141	4.210	1.582	0.089	3.771	0.349	1.166	126 811

[a] Party reported only aggregate HFC estimates; the secretariat assumed that these emissions were HFC 134a.

[b] Party reported only aggregate PFC estimates; the secretariat assumed that approximately 5 per cent of these emissions are C_2F_6 and the remaining 95 per cent CF_4.

Table C.5
C.5.1 Anthropogenic emissions of CO_2, excluding land-use change and forestry: relative inventory figures for 1991-1994 (Gigagrams and percentage relative to 1990)

	1990 [a]	1991 [b]	1992	1993	1994
		(percentage relative to 1990, 1990=100)			
	(Gg)	%	%	%	%
Australia	288 965	..	..	..	..
Austria	59 200	108	100	..	..
Bulgaria (1990)	82 990	..	..	..	..
Bulgaria (1988) [c]	96 878	..	..	..	..
Canada	462 643	98	101	102	105
Czech Republic	165 792	94	86	84	..
Denmark	52 025	121	110	114	121
Denmark (elect. trade adjusted) [d]	58 278	105	104	103	101
Estonia	37 797	97	74	55	57
Finland	53 900	100	96	97	108
France	366 536	106	102	100	..
Germany	1 014 155	96	91	90	..
Greece	82 100	..	..	..	..
Hungary (1990)	71 673	..	..	..	..
Hungary (1985-1987) [c]	83 676	..	..	..	..
Iceland	2 172	96	101	106	..
Ireland	30 719	..	..	..	..
Italy	428 941	..	..	..	..
Japan	1 155 000	102	103	101	107
Latvia	22 976	..	..	..	..
Liechtenstein	208	..	..	..	..
Luxembourg	11 343	..	..	..	..
Monaco	71	..	..	..	..
Netherlands	167 600	104	103	104	105
Netherlands (temp. adjusted) [e]	174 000	100	101	100	102
New Zealand	25 476	102	110	107	108
Norway	35 514	95	96	101	106
Poland (1990)	414 930	96	90	..	..
Poland (1988) [c]	478 880	83	78	..	..
Portugal	42 148	..	..	..	..
Romania (1990)	171 103	83	72	70	..
Romania (1989) [c]	198 479	71	62	61	..
Russian Federation	2 388 720	..	..	..	..
Slovakia	58 278	..	..	..	..
Spain	227 322	..	..	..	..
Sweden	61 256	89	92	90	95
Switzerland	45 070	103	101	98	96
United Kingdom	577 012	102	99	97	96
United States	4 957 022	99	100	103	103

[a] For further details on 1990 figures see table A.1.
[b] For further details on 1991-1994 figures see table C.1.
[c] Some Parties with economies in transition have chosen different base years than 1990, referring to Article 4.6.
[d] All figures are adjusted for electricity trade.
[e] All figures are adjusted for temperature.

Table C.5 *(continued)*
C.5.2 Anthropogenic emissions of CH_4: relative inventory figures for 1991-1994 (Gigagrams and percentage relative to 1990)

	1990 [a]	1991 [a]	1992	1993	1994
		(percentage relative to 1990, 1990=100)			
	(Gg)	%	%	%	%
Australia	6 243	..	..	..	..
Austria	603	..	..	..	..
Bulgaria (1990)	1 370	..	..	..	..
Bulgaria (1988) [c]	1 413	..	..	..	..
Canada	3 088	102	106	110	115
Czech Republic	942	..	..	..	..
Denmark	407	100	100	100	98
Estonia	323	89	70	56	58
Finland	252	100	97	96	98
France	2 896	99	97	98	..
Germany	5 682	92	91	92	..
Greece	343	..	..	..	..
Hungary (1990)	545	..	..	..	..
Hungary (1985-1987) [c]	664	..	..	..	..
Iceland	23	100	91	92	..
Ireland	796	..	..	..	..
Italy	3 901	..	..	..	..
Japan	1 382	99	96	95	..
Latvia	159	..	..	..	..
Liechtenstein	1	..	..	..	..
Luxembourg	24	..	..	..	..
Monaco	..	..	..	..	..
Netherlands	1 060	103	101	101	98
New Zealand	1 986	98	96	94	95
Norway	290	100	101	101	102
Poland (1990)	6 100	..	41	..	..
Poland (1988) [c]	3 042	..	81	..	..
Portugal	226	..	..	..	..
Romania (1990)	1 954	88	77	77	..
Romania (1989) [c]	2 328	74	65	65	..
Russian Federation	27 000	..	..	..	..
Slovakia	347	..	..	..	..
Spain	2 151	..	..	..	..
Sweden	329	..	66	..	72
Switzerland	332	99	97	96	96
UK	4 531	97	95	91	86
USA	27 000	101	101	99	104

[a] For further details on 1990 figures see table A.4.
[b] For further details on 1991-1994 figures see table C.2.
[c] Some Parties with economies in transition have chosen different base years than 1990, referring to Article 4.6.

Table C.5 *(continued)*
C.5.3 Anthropogenic emissions of N_2O: relative inventory figures for 1991-1994 (Gigagrams and percentage relative to 1990)

	1990 [a]	1991 [b]	1992	1993	1994
		(percentage relative to 1990, 1990=100)			
	(Gg)	%	%	%	%
Australia	60.1	..	..	..	..
Austria	4.1	..	..	..	..
Bulgaria (1990)	22.5	..	..	..	..
Bulgaria (1988) [c]	30.8	..	..	..	..
Canada	95.5	99	103	105	116
Czech Republic	24.0	..	..	..	..
Denmark	10.3	104	103	105	106
Estonia	2.4	96	75	58	54
Finland	22.0	100	45	50	50
France	176.7	101	99	97	..
Germany	211.0	91	94	91	..
Greece	13.7	..	..	..	..
Hungary (1990)	11.4	..	..	..	..
Hungary (1985-1987) [c]	12.9	..	..	..	..
Iceland	0.6	100	100	100	..
Ireland	42.3	..	..	..	..
Italy	120.3	..	..	..	..
Japan	55.2	97	97	98	..
Latvia	2.4	..	..	..	..
Liechtenstein	0.1	..	..	..	..
Luxembourg	0.6	..	..	..	..
Monaco	..	..	..	..	..
Netherlands	51.5	117	116	113	113
New Zealand	17.1	99	103	109	112
Norway	15.0	100	87	93	93
Poland (1990)	156.0	..	32	..	..
Poland (1988) [c]	58.9	..	85	..	..
Portugal	10.5	..	..	..	..
Romania (1990)	106.8	85	64	92	..
Romania (1989) [c]	66.7	..	..	..	..
Russian Federation	89.6	..	..	..	..
Slovakia	16.0	..	..	..	..
Spain	93.9	..	..	..	..
Sweden	15.2	..	132	..	161
Switzerland	15.6	101	101	100	104
UK	108.3	99	84	75	87
USA	411.4	97	97	97	87

[a] For further details on 1990 figures see table A.5.
[b] For further details on 1991-1994 figures see table C.3.
[c] Some Parties with economies in transition have chosen different base years than 1990, referring to Article 4.6.

Table C.5 *(continued)*

C.5.4 Anthropogenic emissions of all greenhouse gases, excluding land-use change and foresty: relative inventory figures for 1991-1994 (Gigagrams and percentage relative to 1990)

	1990 [a]	1991 [b]	1992	1993	1994
		(percentage relative to 1990, 1990=100)			
	(Gg)	%	%	%	%
Australia	465 305	..	..	..	..
Austria	75 286	..	..	..	..
Bulgaria (1990)	123 755	..	..	..	..
Bulgaria (1988) [c]	141 345	..	..	..	..
Canada	577 954	99	102	103	106
Czech Republic	196 551	..	..	..	..
Denmark	65 517	117	108	111	119
Denmark (electr. trade adjusted) [d]	71 770	104	103	103	103
Estonia	46 479	96	73	55	57
Finland	67 114	100	91	92	102
France	494 032	104	101	99	..
Germany	1 241 509	94	90	90	..
Greece	94 888	..	..	..	..
Hungary (1990)	88 674	..	..	..	..
Hungary (1985-1987) [c]	104 082	..	..	..	..
Iceland	3 227	95	92	94	..
Ireland	63 757	..	..	..	..
Italy	563 117	..	..	..	..
Japan	1 206 523	102	103	101	..
Latvia	27 640	..	..	..	..
Liechtenstein	265	..	..	..	..
Luxembourg	12 123	..	..	..	..
Monaco	71	..	..	..	..
Netherlands	213 946	105	103	104	105
Netherlands (temp. adjusted) [e]	220 346	102	102	101	103
New Zealand	80 266	99	101	99	100
Norway	52 235	96	92	96	100
Poland (1990)	614 300	..	73	..	..
Poland (1988) [c]	572 257	..	78	..	..
Portugal	51 045	..	..	..	..
Romania (1990)	253 152	84	72	75	..
Romania (1989) [c]	276 859	77	66	68	..
Russian Federation	3 078 892	..	..	..	..
Slovakia	71 900	..	..	..	..
Spain	310 070	..	..	..	..
Sweden	75 573	..	91	..	95
Switzerland	58 196	103	100	98	97
United Kingdom	724 754	101	97	94	94
United States	5 842 371	99	101	102	103

[a] For further details on 1990 figures see tables A.1, A.4, A.5 and A.7.
[b] For further details on 1991-1994 figures see tables C.1-C.4.
[c] Some Parties with economies in transition have chosen different base years than 1990, referring to Article 4.6.
[d] All figures are adjusted for electricity trade.
[e] All figures are adjusted for temperature.